

'But how do we do that? What do we need?' Using multidisciplinary simulation to learn how to safely facilitate radiological imaging for ventilated neonates

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Background

Prior to 2019, magnetic resonance imaging (MRI) for ventilated neonates was not undertaken at our trust. Instead, a dedicated neonatal transport team would transfer the patient to the tertiary centre for imaging and then repatriate the patient. Due to the intensity of resources required for this 40-minute procedure, it was proposed that the teams and facilities at our trust should facilitate this instead. Training on using the transport incubator is provided at induction and team members are designated on the day to assist. Previously, the procedure has taken over 4 hours to complete.

There are numerous factors that may complicate this scenario, including the fact that the standard endotracheal fixation device used on the neonatal unit is not MRI compatible. Furthermore, the team would need to decide whether to transport the patient through wards and corridors but change the oxygen cylinders at least once en route (**green route**). Alternatively, a shorter route can be chosen, but this goes through a car park and therefore an ambulance has to be arranged for this (**pink route**).

The simulation scenario

A multi-professional, inter-specialty in-situ simulation was delivered whereby a ventilated neonate was transported from the neonatal unit to MRI. The neonatal and radiology team were briefed and were asked to stay in their normal roles. Once the scenario was completed, the team were debriefed using a diamond debrief model and written feedback was requested to obtain qualitative and quantitative responses

Results

There were 6 candidates from the neonatal and radiology department. Reflective comments were overwhelmingly positive, with candidates explaining how the simulation helped to understand each other's roles or 'the strengths and failings in our common knowledge'. Candidates commented how this simulation had improved their confidence, with the average confidence score in managing this scenario increasing from 3.33 (where 1 is very low confidence to 5 as very high confidence) to 4.5. Two candidates suggested that equipment stocks needed to be re-evaluated e.g. MRI compatible ventilators and two others suggested formalising the process into a checklist or protocol and then running the scenario again.

Neonatal Unit Pre-Transfer to MRI Checklist for Ventilated Babies

Please note this is to be used as a prompt and NOT as an exhaustive list
It can be filled in by any member of the transfer team

What do you need?	Is the patient safe to have an MRI?		Are other teams ready for the patient to be moved?	
	Yes	No	Yes	No
Emergency Drugs/extra sedation			Stable gases/BM + Obs	
Grab Bag (with BVM)			ET tube length checked	
Transport incubator checked + portable O2			Is ET fixation MRI compatible?	
Primed extensions for any IVs (4m)			MRI ready with their equipment	
BVM ventilation extension (green tubing)			Ambulance ready + happy to wait	
MRI safety questionnaire completed			Porters ready	

Conclusion

This simulation demonstrated why simulation-based education is key to identifying latent threats and knowledge gaps due to systemic flaws. Since conducting this simulation, several changes have been made to the process in line with the candidates' feedback. From a neonatal perspective, a checklist is being ratified as well as a laminated instruction card on how to set up the transport incubator. The MRI team collated key action points and have circulated them to those working with paediatric patients. Overall, the simulation has established a better communication channel for both teams to liaise with each other to improve the patient experience and safety. We aim to run this scenario again when all these interventions have been approved for use.

