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**Comparing low field (Innervision) and high field (GE) dedicated Neonatal MRI systems****Martyn Paley**

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**M**RI is an amazing technology for diagnosis, especially for the central nervous system, but is yet under-used for imaging neonates. This is mainly due to the problems of transporting the neonate from the caring environment of the Neonatal Intensive Care Unit to the MRI unit. This is often a long journey in many hospitals and may even necessitate an ambulance transfer, creating many logistical difficulties. We have extensive experience of imaging neonates with MRI units located within the neonatal intensive care unit (NICU). The first system was a specialised low field (0.2T) MRI system using a permanent magnet which featured safe operation with low acoustic noise and specific absorption rate (SAR) for radiofrequency. Over 1000 babies were safely scanned using this system providing an initial diagnosis, often within

hours of birth, allowing improved prognosis and treatment options to the neonatal clinicians and timely information for the parents. The system was installed in a space of 2m x 1m and only required a single mains outlet. However, the image quality associated with low field imaging is not competitive with the latest generation high field superconducting magnet systems. To this end, we have worked extensively with the MRI manufacturer GE Healthcare to develop a compact 3T MRI system and a system has now been installed in the NICU for over 2-years for clinical evaluation. Image quality and operational issues associated with the two systems will be contrasted and compared. In addition, initial concepts for a new, cost-effective neonatal MRI system will be presented.

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