
RSNA Press Release

Special Incubators Allow High Quality Imaging of Critically Ill Newborns

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OAK BROOK, Ill. - A newly developed, magnetic resonance (MR)-compatible incubator allows radiologists to safely and efficiently obtain quality diagnostic images of sick infants, according to a study appearing in the May issue of the journal *Radiology*.

"MR imaging is the most desirable imaging test for many newborns because there is no exposure to radiation," said the study's lead author, Stefan Blüml, Ph.D., associate professor at The Saban Research Institute at Childrens Hospital Los Angeles, and the department of radiology, University of Southern California (USC) Keck School of Medicine. "However, many sick newborns cannot be studied by MR, even when clinically indicated, because of concerns for their safety during transport and during the procedure."

Logistical challenges in providing good diagnostic imaging of newborns are considerable and include monitoring circulation and maintaining constant control of temperature, airflow and humidity. Consequently, few newborns are examined with MR imaging, which is, for many indications, the most accurate non-invasive diagnostic test. Unlike radiography (x-rays) and computed tomography (CT), MR imaging carries no radiation risk.

"The MR-compatible incubator streamlines the MR examinations of newborns and allows the nursing staff to do most of the patient preparation inside the NICU's (neonate intensive care unit) safe environment," Dr. Blüml said.

The researchers conducted 13 MR imaging studies on neonates to evaluate an MR-compatible incubator with air temperature and humidity regulation and integrated radiofrequency coils. Image quality was superior to images obtained with standard MR equipment. No complications were encountered, vital signs remained normal, and there was little axillary temperature fluctuation.

The customized small coils used with the MR-compatible incubators reduce scan time and

At A Glance

- A new magnetic resonance (MR)-compatible incubator allows for safe imaging of infants.
- MR is the most desirable diagnostic imaging test for many newborns and carries no radiation risk.
- MR-compatible incubators reduce scan time and improve image resolution.

improve image resolution. Typically, MR imaging exams of infants are performed with the manufacturer's one-size-fits-all coils designed for adult heads.

"We found that image quality was far superior to images obtained with standard MR equipment," Dr. Blüml said. "We believe that MR-compatible incubators are beneficial for babies and will be cost efficient in the long run."

Dr. Blüml is hopeful that this new technology will allow more MR studies of newborns, which will result in earlier and improved diagnoses and enable early intervention and treatment. He believes that the incubator's safe environment will enable more neonatal clinical research.

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"MR Imaging of Newborns by Using an MR-compatible Incubator with Integrated Radiofrequency Coils: Initial Experience." Collaborating with Dr. Blüml on this study were Philippe Friedlich, M.D., Stephan Erberich, Ph.D., John C. Wood, M.D., Ph.D., Istvan Seri, M.D., Ph.D., and Marvin D. Nelson, Jr., M.D.

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