
Optical Imaging: Advancing Standard of Care in Paediatric ICU



Researchers at the Massachusetts General Hospital have launched an investigation of the effects of general anaesthesia on infants' brains that could help to improve clinical outcomes.

Based on previous studies, infants exposed to general anaesthesia in early life have significantly increased risk of developmental delays. Despite known risks, "brain monitoring during anaesthesia is not a standard of care so far," said Pei-Yi (Ivy) Lin, a researcher in the Optics Division in the Martinos Center for Biomedical Imaging at the Massachusetts General Hospital.

With this in mind, Lin and colleagues currently are working to integrate an innovative optical imaging technology – near-infrared spectroscopy (NIRS) – into perioperative monitoring in the clinic. NIRS offers a means to measure haemodynamics noninvasively and without ionising radiation.

The new technology will allow further investigation of the effects of general anaesthesia on cerebral perfusion and oxygen metabolism in infants. Hopefully, it could also enable age-appropriate, goal-directed cerebral haemodynamic management, which could help to spare infant brains from the harmful effects of anaesthesia, Lin said.

The research work will be bolstered by funding from the Harvard Catalyst resource, which is dedicated to advancing knowledge in the clinical/translational research domain. The Early Clinical Data Support for Grant Submissions award provides clinical investigators with resources to generate the preliminary data they need to compete successfully for federal or non-federal sponsored funding.

The grant will directly support Lin as she launches the optical imaging project in the paediatric intensive care unit at the Massachusetts General Hospital.

Since 1811, Massachusetts General Hospital has been committed to delivering standard-setting medical care. The hospital is consistently ranked among the top five hospitals in the nation by U.S. News & World Report, which currently ranks Mass General as first in the metro Boston area and second in the U.S. Mass General is the original and largest teaching hospital of Harvard Medical School, where nearly all of its physicians are faculty members.

The Martinos Center is committed to developing novel techniques for imaging biological systems and biologically relevant materials, and to applying these techniques toward a more comprehensive understanding and better care of the human mind and body. This involves development and continued improvement of new hardware and software and procedures for data acquisition, visualisation and statistical analysis.

Source: [MGH/HST Martinos Center for Biomedical Imaging](#)

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