ICMR offers indigenous tech to replace CT/MRI scans for traumatic brain injuries, seeks support from State governments

CEREBO is a portable, handheld, non-invasive brain injury diagnostic tool that can provide colour-coded, radiation-free and cost-effective results; it is safe for infants and pregnant women

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BINDU SHAJAN PERAPPADAN

A view of the Indian Council of Medical Research (ICMR) in New Delhi. File | Photo Credit: The Hindu

Aimed at reducing mortality and disabilities caused by traumatic brain injuries (TBI), especially in rural areas where advanced diagnostic tools, including CT (computerised tomography) or MRI (magnetic resonance imaging) scans are inaccessible or delayed,

the Indian Council of Medical Research (ICMR) is offering CEREBO, a portable, non-invasive brain injury diagnostic tool which has been developed using advanced near-infrared spectroscopy technology powered by machine learning.

The ICMR is now seeking support from State governments to leverage this indigenous, relatively low-cost technology.

The handheld machine is safe for infants and pregnant women, too. It can be used by paramedical staff as well as unskilled personnel with just 30 minutes of training.

“TBI is a significant public health challenge, particularly in emergency settings. Traditional methods, such as the Glasgow Coma Scale, are prone to errors and subjective interpretations, while imaging techniques require specialised infrastructure, trained personnel, and are cost-intensive,” Dr. Rajiv Bahl, head, ICMR, said.

The new device could detect intracranial bleeding and edema within a minute, he added, and provided colour-coded, radiation-free, and cost-effective results.

“Designed for deployment in ambulances, trauma centres, rural clinics, and disaster response units, it enhances early TBI detection and patient outcomes,” Dr. Bahl said.

Developed in a collaboration between the ICMR, the Medical Device and Diagnostics Mission Secretariat (MDMS); All India Institute of Medical Sciences (AIIMS), Bhopal; the National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru; and Bioscan Research, CEREBO has undergone clinical validation, regulatory approvals, and feasibility studies, “paving the way for global adoption in emergency and military healthcare systems,” Dr. Bahl said.

Additionally, the ICMR noted that multi-centre clinical performance evaluation, and utility trials supported by the ICMR-MDMS’s mPRiDE scheme, were conducted at leading trauma care and neurosurgical centres to generate robust, prospective evidence on diagnostic accuracy, time-to-decision benefits, and integration feasibility within emergency care pathways.

The ICMR is now seeking to enhance the device’s adoption in tertiary care to accelerate CT scans, optimise triage, and reduce imaging costs.

India has the highest incidence of head injuries in the world, according to the Indian Head Injury Foundation, with more than 100,000 lives lost to head injuries every year, and over one million persons suffering from serious head injuries.

Half of those who die from TBI do so within the first two hours of injury. It's now known that only a portion of neurological damage occurs because of impact (the primary injury), and damage progresses during the ensuing minutes, hours, and days. The secondary brain injury can result in increased mortality and disability. Consequently, early and appropriate management of TBI is critical in securing better outcomes for patients.

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