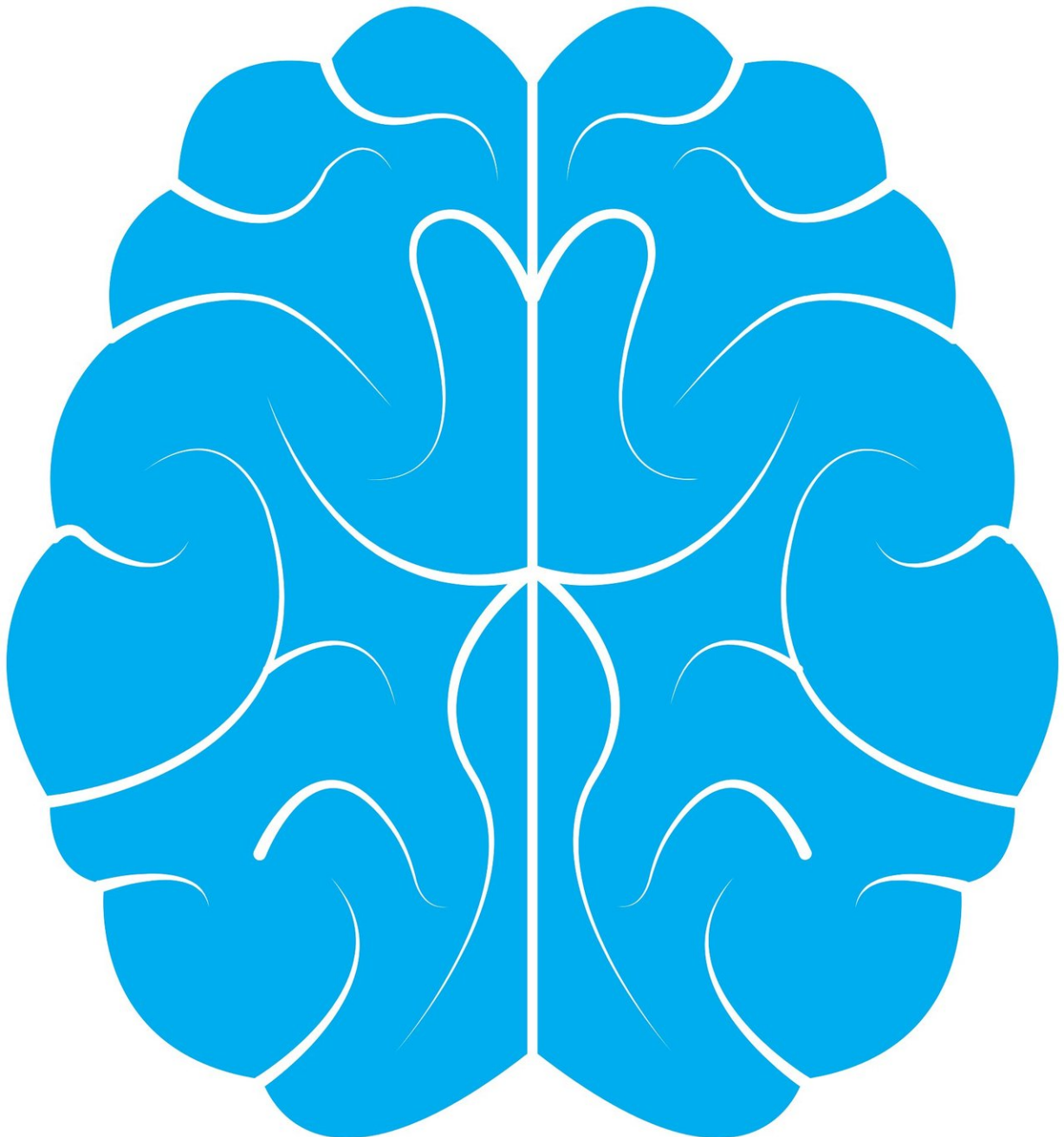


Researchers study new method of assessing severity of children's brain injuries

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A team of international scientists, including Melbourne researchers, has found blood samples can help gauge the severity of children's brain injuries, indicating which children will recover and which will need ongoing support.

The Murdoch Children's Research Institute (MCRI), working with Canadian scientists, analysed blood from 158 [children](#) who presented with [head injuries](#) at children's hospitals in Melbourne, Toronto, Montreal and Vancouver from 2011 to 2013. These patients were selected from a pool of 1680 children who presented with head injuries. Their results were compared with those of 416 healthy children.

The study is published in *The Lancet* journal.

MCRI's Clinical Services Director Professor Vicki Anderson says that traumatic [brain injury](#) is the leading cause of death and acquired disability for children in high-income countries like Australia and Canada.

"Around 0.7 percent of the child population is treated in emergency departments every year for traumatic brain injury, that's almost one in a hundred children," Prof Anderson said.

"The leading causes of traumatic brain injury to children are falls, car crashes, sport and abuse."

Prof Anderson says the study looks at whether levels of a blood

biomarker—a protein called tau—can help better understand the severity of brain injury in children under 18.

"CT scans are used to diagnose brain injury but there are concerns about exposing children to radiation and young children often need to be sedated," she says.

"Doctors can measure levels of the neuronal microtubule-associated protein tau and this indicates the severity of brain injury in adults. However tau levels naturally fluctuate more in children so research was needed to test whether this would work."

Prof Anderson says the study has found that measuring levels of tau in [older children](#) gives doctors an indication of the severity of mild brain disorders, however more research is needed.

"Measuring tau levels will help us identify which children with brain injury will recover well and which will have the highest risk of ongoing problems and so require treatment, such as rehabilitation and ongoing support at school," she said.

Prof Anderson said the team believes this is the first large-scale study to report on tau concentrations in both healthy children and children with traumatic brain injury.

"Tau levels naturally fall in healthy children as they age but tau increases immediately after a [traumatic brain injury](#)."

Prof Anderson says to use [blood samples](#) to assess the severity of child brain injuries, the team first established what the normal levels of tau in children should be according to age.

"We showed that tau decreases as children grow, with three significant

age partitions, less than four years, four to 15 years and 16 to 19 years," she says.

Prof Anderson says future studies are needed to look at tau levels after the first day of injury and also to search for other biomarkers of [brain injury](#).

More information: Sophie Stukas et al. Characterisation of serum total tau following paediatric traumatic brain injury: a case-control study, *The Lancet Child & Adolescent Health* (2019). [DOI: 10.1016/S2352-4642\(19\)30194-4](#)

Provided by Murdoch Children's Research Institute

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