

Outcomes for children after brain injury difficult to predict and highly variable

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Outcomes for children with brain injury acquired during childhood are difficult to predict and vary significantly, states an analysis of evidence on the topic published in *CMAJ* (*Canadian Medical Association Journal*).

"There is no single best approach to describing outcome after acquired brain injury during childhood, and the one chosen must be appropriate to the purpose at hand (e.g., identifying individual, population, global or domain-specific outcomes)," writes Dr. Rob Forsyth, Institute of Neuroscience, Newcastle University and Great North Children's Hospital, Newcastle-upon-Tyne, UK, with coauthors.

Brain injury, acquired after a period of normal development, is the leading cause of death and disability in children after infancy. Survival in the past was uncommon, but advances in medical care, especially in the [pediatric intensive care](#) unit have increased survival rates for injured children.

However, there is a lack of high-quality evidence to help physicians and families make decisions about care and the possible withdrawal of care. Although there is ample literature regarding adults, much of it cannot be extrapolated to children. Researchers from the UK analyzed the English-language literature from 1966 to the present to provide an overview of factors and challenges for physicians to consider.

The cause of injury is a strong predictor of outcome. For example, recovery from traumatic brain injuries is more likely than that from

injuries caused by a [lack of oxygen](#) to the brain (from drowning or suffocation), although good recovery of motor skills can mask later psychological and [psychiatric issues](#) arising from the injury.

Recovery is also challenged by the age at which injury occurs, since a child's brain is developing and growing and must at the same time recover. "The very young brain can appear remarkably resilient to focal injury, although this view has been challenged," state the authors.

"What is clear, however, is that widespread views that young brains make better recoveries are naive," they write. "Early injury alters the entire developmental trajectory (the challenge of making 'a year's progress every year' with an injured brain), and effects can compound through childhood. This is particularly clear in the literature surrounding pediatric [brain injury](#), where sometimes impressive early motor recoveries obscure the characteristic emergence of cognitive and psychological morbidity in subsequent years."

Sophisticated imaging tests can help determine severity of injury and predict outcome in adults, but many of these techniques have not been studied for use with children.

The authors conclude that it is challenging to improve outcomes for children with acquired brain injuries because of the complexity and unpredictability of recovery in children. They emphasize that prevention of injury, especially from accidents or infections, should be a key focus and that other approaches need to be tailored.

More information: www.cmaj.ca/lookup/doi/10.1503/cmaj.111045

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