



# UNDER THE Microscope

**Thanks to the generosity of our donors, the Cerebral Palsy Foundation is supporting the important work of researchers throughout the world. One such researcher is Epidemiologist Associate Professor Eve Blair, who explains why she is hopeful of finding answers, despite the difficulties identifying the causes of CP.**

For most of her 28 year career, Associate Professor Eve Blair has been investigating the causes of cerebral palsy. In 2007 she was awarded an \$80,000 grant by the Cerebral Palsy Foundation to further her vital work.

Associate Professor Eve Blair and her colleagues have used the grant for a project that involved analysing the records of a large group of people with CP to see what factors are common to them that are less common in people without CP.

As guest speaker at the Foundation's recent Research Briefing, Associate Professor Eve Blair revealed her findings to many of our key supporters, and is now providing Breakthrough readers with a summary of her presentation.

'One difficulty in studying cerebral palsy is the absence of a universally accepted vocabulary for talking about the condition. For example, although CP is defined as a motor impairment resulting from a permanent abnormality of the brain that occurred in early development, there is no consensus, in either the medical or research community, on how early is 'early development'. People born with CP are always included but those with CP resulting from a post neonatal event may instead be labelled 'acquired brain injury'.

The distinction between pre and post neonatal acquisition is useful to researchers because the immediate cause is known in the latter, so we can at least begin to devise preventive strategies. However, in the former, the immediate cause is usually much less obvious.

The overall rate of cerebral palsy acquired after birth has remained the same, despite fewer childhood

head injuries and brain infections. This is because an increased number of children now develop cerebral palsy after a stroke. The rising rate of childhood stroke is thought to be caused by increasingly powerful and sophisticated paediatric care saving babies at-risk of stroke and increasing the survival of children after stroke.

In such cases the stroke is the immediate cause of the brain damage. However, prevention would be most safely effected by identifying and preventing the causes of perinatal stroke, which would require interventions long before birth. This is an example of a causal pathway, where preceding events increase the likelihood of subsequent events, leading eventually to a point at which the brain is irreversibly damaged. Rational prevention therefore requires understanding as much of each causal pathway as possible.

In acquired CP, there are several possible causal paths, each requiring different preventive strategies, and the distribution of these causes has changed over time.

The same is true of CP that is not post neonatally acquired with the added difficulty that it is frequently unclear what the immediate cause was. Therefore, we have no sure starting point from which to differentiate, and hence to study, the individual causal pathways. Instead, we must fall back on risk factors whose causal role is more dubious and which may be associated with more than one causal path.

Despite these difficulties, I believe there is hope for the future. We are now aware of the plurality of cause. This

has opened up the field of aetiological research way beyond the traditional field of obstetrics. Technology continues to improve, particularly in the field of cerebral imaging enabling reliable identification of patterns of brain damage, a very valuable step towards differentiating the different causal pathways to CP. There are also an increasing number of tools in which to map brain function, facilitating the identification of early interventions that encourage plasticity to overcome functional impairment.

There is even the hope that stem cell therapy may offer the possibility of cure in the future, but as yet there is no reliable evidence that stem cell therapy can successfully repair the brain abnormalities of a person with CP. There is therefore a great deal of research to be done on these new fronts, and indeed it has already started.'

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**If you would like more information on our Research Briefings, contact Marisa Chilcott on 9479 7286**

