

# Early Diagnosis and Intervention

Detecting, diagnosing and intervening early to improve quality of life for all children with cerebral palsy



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Early intervention and treatment can make a huge difference to the lives of children with cerebral palsy (CP). Neuroscience research tells us that intensive, repeated, task-specific and play-based early intervention should ideally commence as early as possible for children diagnosed with, or at high risk of cerebral palsy.

Starting treatment as soon after brain injury as possible optimises the nervous system's ability to change its activity in response to experience by reorganising its structure, functions, or connections. Early identification and diagnosis are essential. Infants at risk of CP need targeted, customised early intervention and ongoing monitoring to prevent secondary problems from occurring, and ongoing support for their parents and carers.

Our team led the development of International Clinical Practice Early Diagnosis Guidelines for infants who are at risk or have a CP diagnosis. The guidelines make strong recommendations for a major change in standard diagnostic practice for young children, and have recently been complemented by an international guideline for early intervention aiming to optimise neuroplasticity, prevent common secondary impairments and enhance parent wellbeing.

Australian babies can be diagnosed with CP as early as 3 months of age if the most accurate assessments are used at the right time. However, fragmented practice means most children are diagnosed well after 12 months of age and a vital window of opportunity for interventions during a critical phase of the baby's brain development is lost.

A standardised early detection test is unavailable in Australia and early childhood checks and systems vary across the country. MRI and General Movements Assessment (GMA) are available but not fully implemented.

## Optimal outcomes for every baby: best management and care across the globe.

Priority areas for CPA's early diagnosis and intervention research:

1. Identify all infants with CP before the age of 6 months
2. Advance evidence for early intervention strategies that work and support their implementation
3. Advance and support research to understand the best timing, dose and intensity for early intervention for all levels of disability

### Neuroimaging - MRI

Only two-thirds of children with CP have an MRI performed, even though MRIs are regarded as important for diagnosis and outcome prediction. There is currently no MRI device specifically for neonatal brain and head imaging available for babies in Neonatal Intensive Care Units (NICUs) in NSW. Funding for people and equipment is critically needed, to enable the purchase of neonatal MRI systems for the children's hospitals together with funding for adequate numbers of radiologists to conduct MRI scanning for babies.

### Standardised Motor Assessment - General Movements

**Assessment (GMA)** is a non-invasive and cost-effective way to identify neurological issues which may lead to CP and other developmental disabilities. GMA uses a simple video to observe a child's spontaneous movement between birth and 20 weeks of age. Trained assessors score movement quality from the video. Systematic review evidence tells us that GMA is the best assessment tool available to predict high-risk of CP and is more able to predict CP than cranial ultrasound and MRI neuroimaging, however a combination of the two tools gives best prediction. Funding is needed for resources to assess videos of babies taken by parents/ caregivers, and for therapy practitioners across Australia to be GMA trained.

### Standardised Neurological Assessment - Hammersmith

**Infant Neurological Examination (HINE)** is recommended in the International Clinical Practice Early Diagnosis Guidelines, particularly in situations where the most predictive tools (GMA and MRI) are not able to be used. This is particularly relevant for an estimated half of all babies with CP in Australia who were not sick at birth. Clinicians and researchers need to be trained in how to administer the assessment in infants, to determine their CP risk status.

**Australia's first Early Diagnosis Clinic at Prairiewood** has been operating one day a week since 2018, actively supporting over 100 babies and their families, representing an estimated 40% of babies born with CP in NSW. Funding is needed to expand the clinic, including costs for Allied Health Professionals, and the establishment of additional clinics across the country.

## What early diagnosis and intervention research means for people with CP

Our goal is for **early detection of CP to become a standard of care in Australia and globally**. We are working towards this through a range of initiatives including: a growing network of clinicians skilled in early diagnosis of CP (GMA network); CPA's first of its kind Early Diagnosis Clinic; ongoing clinician training; and advocacy for national universal screening for CP in Australia. Internationally we are working to identify feasible early diagnosis solutions in Low- and Middle-Income Countries.

**Funding is needed for clinical trials in under-researched areas** including cognition, communication/social skill development, behaviour (upskilling parents to assist their child to regulate their emotions), comparative trials of timing, mode and intensity of evidence-based interventions, providing best practice early intervention via telehealth, intensive motor training options for toddlers, very early enrichment from NICUs to home and pilots to trial novel interventions for infants such as treadmills and tech toys.

**Early intervention provided and evaluated in a systematic way** looking at all aspects of life for a child will have the greatest impact. Communication, eating and drinking skills, managing sleep and pain, preparing for school, the use of assistive technology to maximise mobility, cognition and learning are all crucial areas that require our focus.

## Ambitious research goal

Our ambitious research goal is standardised early detection assessment, diagnosis and intervention for every Australian child at high risk of CP as a model for global application.

## Family perspective

*"He's come leaps and bounds. When we began with the Early Diagnosis Clinic, they said he needed early intervention now. We didn't have NDIS, but they made sure he received physiotherapy, occupational therapy and speech therapy, and we didn't have to pay for anything.*

*At the start, Logan had global development delay of six to nine months. He was still babbling at twelve months old. He wasn't able to crawl, let alone walk.*

*But now he has completely caught up and even sitting ahead of his peers in speech and communication! Plus, he is doing everything a three-year-old can. He is still restricted in jumping and running but he is meeting expectations.*

*If it wasn't for therapies, I don't think he would be where he is today."*

Kayla, Logan's Mum

## Theme Leader



*"Our vision is to see every child with cerebral palsy in Australia identified in the first six months of life and fast tracked to evidence based and customised early intervention, no matter where they live or how complicated their story."*

Dr Cathy Morgan

Dr Cathy Morgan,  
Dr of Philosophy (PhD),  
Early intervention in  
cerebral palsy, BAppSc  
(Physiotherapy)



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