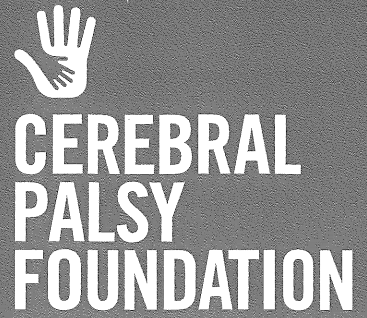


EARLY RECOGNITION OF CEREBRAL PALSY

A PATHWAY TO REFERRAL



A NEW UNDERSTANDING: WHY EARLY RECOGNITION OF CEREBRAL PALSY IS ESSENTIAL

While cerebral palsy (CP) diagnoses have traditionally been made at 2 years of age or older, recent studies have shown that specialist providers can make the diagnosis as early as 6 months of age in some cases.

International guidelines for early diagnosis and intervention for cerebral palsy were published in 2017. Developed by a multidisciplinary group of scientific and clinical experts and parent stakeholders, these guidelines are based on the latest systematic review of the evidence. They state that early recognition of CP can and should occur as early as possible so that:

- The infant can receive diagnostic-specific early intervention and surveillance to optimize neuroplasticity and prevent complications
- The parents can receive psychological and financial support, if available

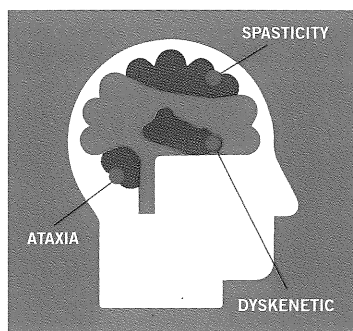
Specialists now have the standardized tools to diagnose early and the knowledge base to recognize which interventions will be helpful in infancy. **Pediatric practitioners, as the medical home for these children, have a critical role in the early recognition of CP.**



“I FELT GRATITUDE FOR KNOWING ABOUT MY DAUGHTER’S DIAGNOSIS SO EARLY SO WE COULD INTERVENE EFFECTIVELY AND QUICKLY TO GIVE HER THE VERY BEST OUTCOMES.”

WHAT IS CEREBRAL PALSY?

Cerebral palsy is a group of permanent disorders of the development of movement and posture causing activity limitation, which are attributed to nonprogressive disturbances that occurred in the developing fetal or infant brain.



In addition to problems walking, children with cerebral palsy also may have associated impairments of speech and language, feeding, bladder control, vision and hearing. They can also have complicating factors such as intellectual disability, hip displacement, epilepsy, sleep and behavioral disorders.

Cerebral palsy has a prevalence of 3.3 cases per 1,000 live births. In preterm or late preterm infants, or those with a history of birth depression, the rates of cerebral palsy are 2 to 40 times more frequent than in the general population. **However, between 40 and 50 percent of children with CP do not have identifiable risk factors and are under the care of a general or pediatric practitioner.**

WHAT ARE SOME OF THE BEST WAYS FOR A PEDIATRIC PROVIDER TO RECOGNIZE THE NEED FOR REFERRAL FOR EARLY CP EVALUATION?

The international guidelines specify two primary types of very young patients who should be evaluated for cerebral palsy. Those with “newborn detectable risks” have clear risk factors identified before, during or soon after birth – these include children with intrauterine growth restriction (IUGR), neonatal encephalopathy and/or children born preterm.

The second group has “infant detectable risks” which typically manifest after 5 months corrected age, most often to children who did not receive care in a neonatal intensive care unit. The American Academy of Pediatrics (AAP) recommends developmental surveillance at all preventive care visits and standardized developmental screening of all children at 9, 18, and 30 months. **Primary care pediatric providers, as medical homes for children, can often identify infant detectable risks with the use of evaluation tools established by the American Academy of Pediatrics and expert consensus surveys.**

Notably, these tools involve asking questions of parents to learn key elements of motor history, and focusing on six agreed-upon signs that should prompt early referral to specialists for detailed evaluation of CP.

KEY ELEMENTS	EXAMPLE
Delayed acquisition of skill	Is there anything your child is <i>not</i> doing that you think he or she should be able to do?
Involuntary movements or coordination impairments	Is there anything your child <i>is</i> doing that you are concerned about?
Regression of skill	Is there anything your child <i>used to</i> be able to do that he or she can <i>no longer</i> do?
Strength, coordination, and endurance issues	Is there anything <i>other children</i> your child's age can do that are difficult for your child?

Adapted from Noritz GH, Murphy NA. Motor delays: early identification and evaluation. Pediatrics. 2013 Nov; 132(5): e1450-1.

SIGNS PROMPTING REFERRAL FOR SPECIALIST EVALUATION FOR CP

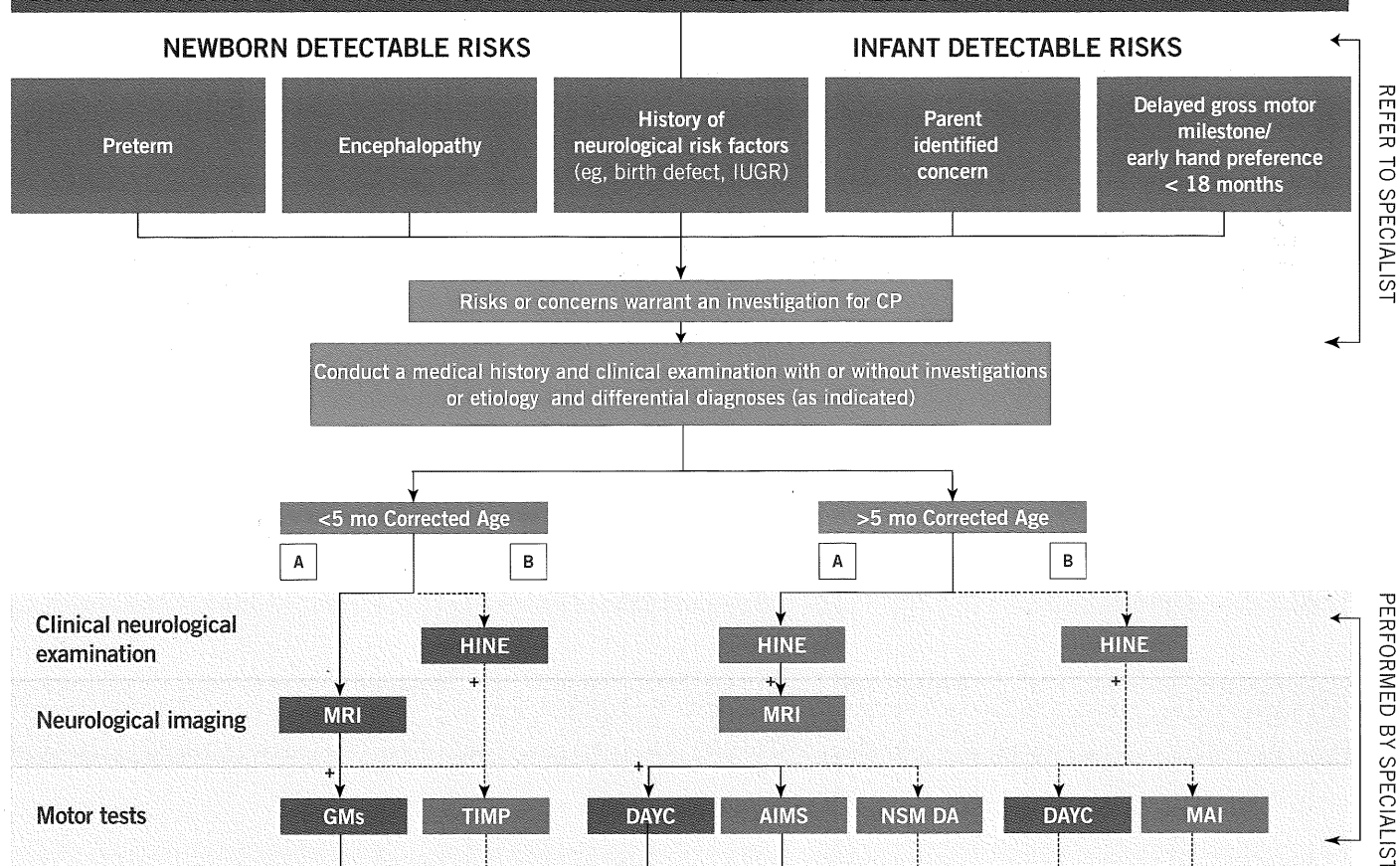
Persistent fisting of the hands past 4 months	Stiffness or tightness in the legs between 6 and 12 months
Persistent head lag beyond 4 months	Early handedness before 12 months
Delayed sitting without support beyond 9 months	Any asymmetry in posture or movement

Adapted from Boychuck Z, Andersen J, Bussieres A, Fehlings D, Kirton A, Oskoui M, Rodriguez C, Shevall M, Snider L, Majnemer A. Prompt referral for diagnosis of cerebral palsy: from current practices to best practices. Developmental Medicine & Child Neurology. 24 Aug 2017 [Epub ahead of print]

WHAT CAN YOU DO ONCE YOU IDENTIFY EARLY SIGNS OF CP?

Refer to programs specializing in infants and toddlers, as this patient population is not simply “little child” and should not be treated as older children are. Because CP is associated with multiple medical and developmental problems, it is preferable to refer to multidisciplinary programs that will address the infant’s development as a whole, rather than only the motor part. These can often be found through NICU Follow-Up programs or developmental pediatric programs; sometimes neurologists or physical medicine specialists also have multidisciplinary clinics.

PATIENT PATHWAY TO DIAGNOSIS FOLLOWING SPECIALIST REFERRAL






Adapted from Novak I, et al. Early, accurate diagnosis and early intervention in cerebral palsy: advances in diagnosis and treatment. *JAMA Pediatrics*. 2017 Sep 1; 171(9): 897-907.

"A" is the best available evidence pathway; "B" is next best if some tools in "A" are not available. **HINE** Hammersmith Infant Neurological Examination **GMs** Prechtl Qualitative Assessment of General Movements **TIMP** Test of Infant Motor Performance **DAYC** Developmental Assessment of Young Children **AIMS** Alberta Infant Motor Scale **NSMDA** Neuro-Sensory Motor Development Assessment **MAI** Motor Assessment of Infants

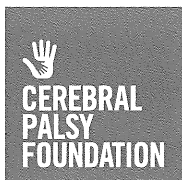
WHAT SHOULD YOU AND YOUR PATIENTS' FAMILIES EXPECT NEXT?

- Prompt evaluation after a referral using the tools stated in the guidelines as the ones with the best level of evidence (see above)
- Diagnosis, counseling and goal setting with the parents
- Specialized surveillance, especially of hip problems
- Coordinated care and communication to partner with you as the medical home for your patient
- Evidence-based parent and provider education resources
- Transitions of care from early specialized to later multidisciplinary programs

EXAMPLES OF EVIDENCE-BASED INTERVENTIONS FOR INFANTS WITH CP

TYPE OF CP	INTERVENTION
Hemiplegia 	Constraint-induced movement therapy
Bilateral types 	Hip surveillance, high intensity physical therapy
Any 	Early, intense, enriched, task-specific, training-based therapy Positive parenting programs Parent-Infant transaction programs for speech and language

DEVELOPED IN PARTNERSHIP WITH:




3 Columbus Circle, 15th floor
New York, NY 10019

212-520-1686

CerebralPalsyFoundation.org

✉ info@YourCPF.org

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