World Cerebral Palsy Day 2016

WHAT IS CEREBRAL PALSY?

Today…

- Quick facts about cerebral palsy (CP)
- Definition
- Causes of CP
- Risk factors
- Diagnosis
- Motor types
- Parts of the body affected by CP
- Gross motor skills
- Manual ability
- Associated impairments
- Evidence-based treatments
- Future
- References

Quick facts

- CP is the **most common physical disability** in childhood
- CP occurs in approximately **1 in 500 live births**, in high income countries
- It is caused by an injury to the developing brain, which mostly happens **before birth**
- There is **no single cause** but researchers can identify a number of **factors** that may lead to the brain injury
- Babies can now be **diagnosed** as at 'high risk of CP' at 3 months of age
- There are many **evidence-based interventions** for CP and new international clinical guidelines will soon be available.

Cerebral palsy

Cerebral palsy (CP) is a physical disability that affects movement and posture

- CP is an umbrella term for a group of disorders that affects a person's ability to move
- CP is due to damage to the developing brain before, during or after birth
- CP affects people in different ways. It can affect body movement, muscle control, muscle coordination, muscle tone, reflex, posture and balance.
- Although CP is a permanent life-long condition, some of these signs of cerebral palsy can improve or worsen over time
- People who have CP may also have visual, learning, hearing, speech, epilepsy and intellectual impairments.

Causes of cerebral palsy

Cerebral palsy (CP) is the result of a combination of events either before, during, or after birth that can lead to an injury in a baby's developing brain

- There are multiple causes of CP – but a series of 'causal pathways', i.e. a sequence of events that combine to cause or accelerate injury to the developing brain.
- About 45% of children diagnosed with CP are born prematurely
- For most babies born at term with CP, the cause remains unknown
- Only a small percentage of CP is due to complications at birth (e.g. asphyxia or lack of oxygen).

Risk factors

Risk factors do not cause CP. However, the presence of some risk factors may lead to an increased chance of a child being born with CP.

Some risk factors for cerebral palsy have been identified. These include:

- premature birth (less than 37 weeks)
- low birth weight (small for gestational age)
- blood clotting problems (thrombophilia)
- an inability of the placenta to provide the developing foetus with oxygen and nutrients
- bacterial or viral infection of the mother, foetus or baby that directly or indirectly attacks the infant's central nervous system
- prolonged loss of oxygen during the pregnancy or birthing process, or severe jaundice shortly after birth.

Diagnosis

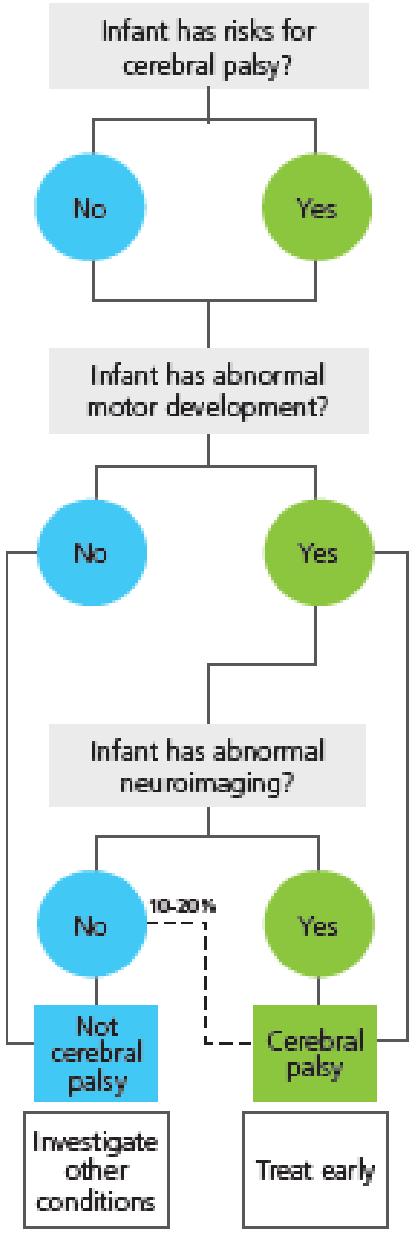
CP can sometimes now be diagnosed early, so interventions can start as soon as possible

Babies can now be assessed as being at ‘high risk of cerebral palsy’ as early as 3-5 months of age.

The most sensitive tools are:

- General Movements Assessment in babies <20 weeks (corrected) - 95% predictive
- Neuroimaging
- Hammersmith Infant Neurological Assessment (HINE) - 90% predictive

See *CP: Diagnosis and Treatment* poster at www.worldcpday.org



Diagnosis (cont)

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Risks for Cerebral Palsy

Risk Factor	CP Risk
Maternal Risks (thyroid, pre-eclampsia, bleeds, infection, IUGR, placental abnormalities, multiples)+/-	
Born Premature • <28 weeks • 28-31 weeks • 31-37 weeks	10.0% 5.0% 0.7%
Term Born • Encephalopathy • Healthy, no known risks	12.0% 0.1%

Assessing Motor Development

Age: <20 weeks (corrected)	Age 6-12 months
General Movements Assessment. 95% predictive.	Developmental Assessment of Young Children (DAYC). 83% predictive.
Hammersmith Infant Neurological Assessment (HINE). Helps predict severity.	Hammersmith Infant Neurological Assessment (HINE). 90% predictive.

Neuroimaging

Abnormal Neuroimaging	% of all CP
• Periventricular white matter injury	19%
• Cerebral malformation	11%
• CVA	11%
• Grey matter injury	22%
• Intracranial haemorrhage	3%
• Infection	2%
• Non-specific	19%
• Normal	13%

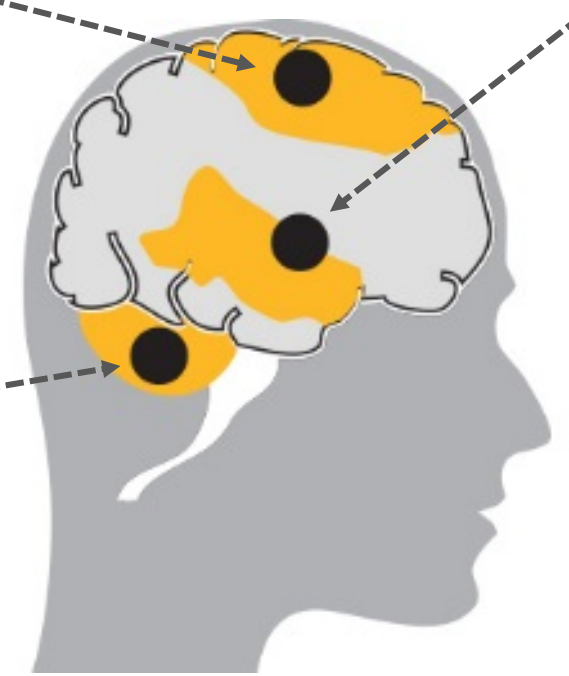
Motor types

SPASTIC: 80-90%

Most common form of CP. Muscles appear stiff and tight. Arises from damage to the Motor Cortex.

ATAXIC: 5%

Characterised by shaky movements. Affects balance and sense of positioning in space. Arises from damage to the Cerebellum.



DYSKINETIC: 6%

Characterised by involuntary movements such as dystonia, athetosis and/or chorea. Arises from damage to the Basal Ganglia.

MIXED TYPES

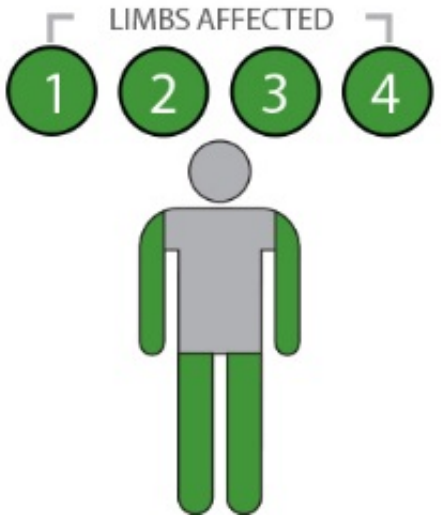
A number of children with CP will have two motor types present, e.g. spasticity and dystonia.

Parts of the body

Cerebral palsy can affect different parts of the body.
For example, for people with **spasticity**:

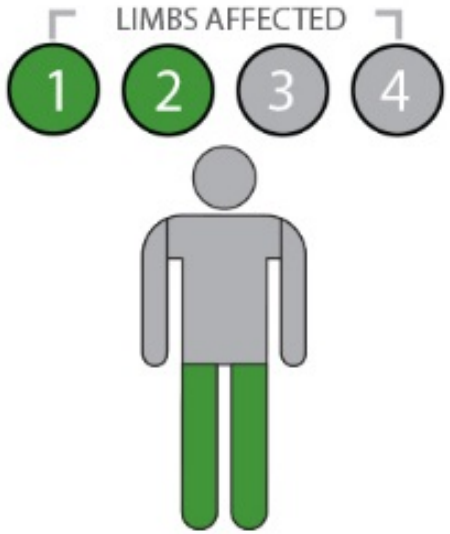
Quadriplegia/Bilateral Spasticity

Both arms and legs are affected. The muscles of the trunk, face and mouth are often also affected.



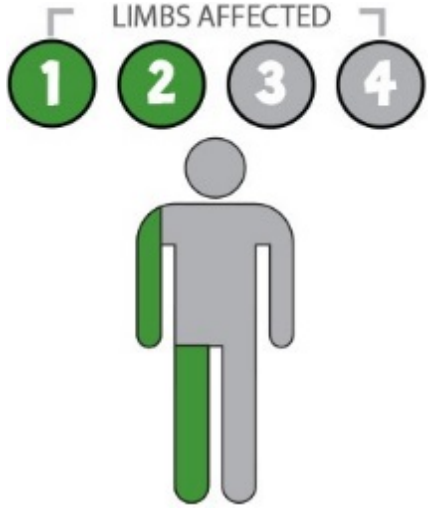
Diplegia/Bilateral Spasticity

Both legs are affected. The arms may be affected to a lesser extent.



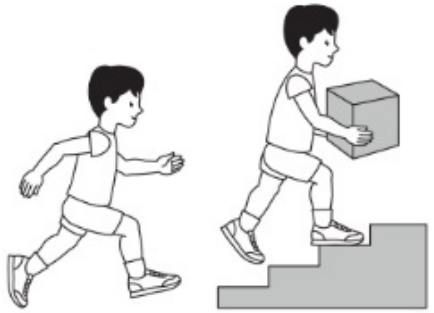
Hemiplegia/Unilateral Spasticity

One side of the body (one arm and one leg) is affected.

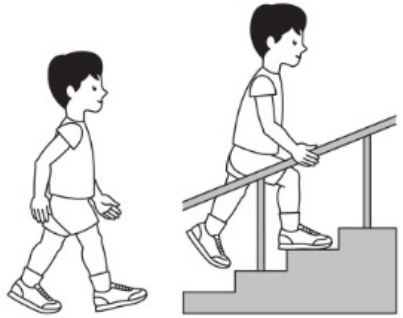


Gross motor skills

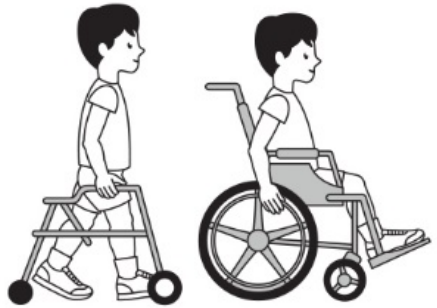
The gross motor skills of children and young people with cerebral palsy can be categorised into 5 different levels using a tool called the Gross Motor Function Classification System (GMFCS) Expanded and Revised, available from CanChild in Canada.



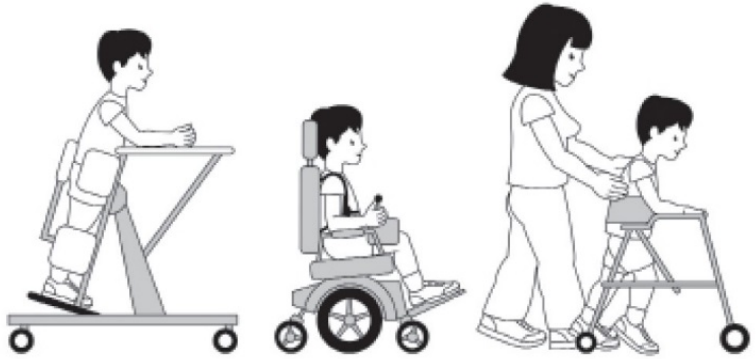
GMFCS Level I



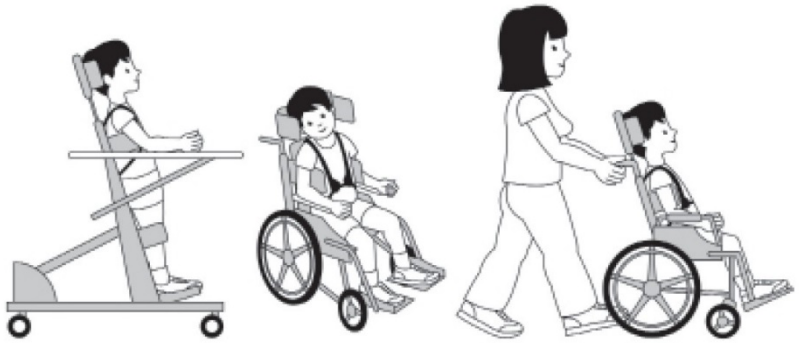
GMFCS Level II



GMFCS Level III



GMFCS Level IV



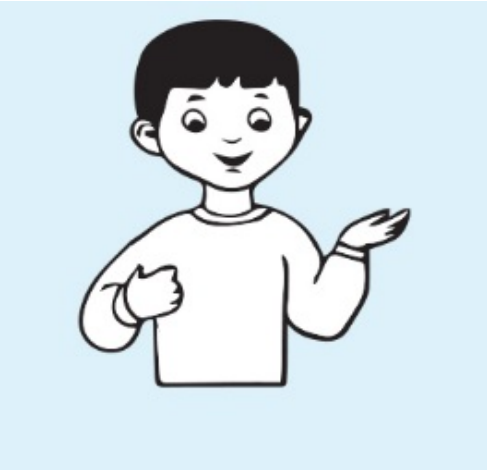
GMFCS Level V

GMFCS Illustrations 6-12: © Bill Reid, Kate Willoughby, Adrienne Harvey and Kerr Graham, The Royal Children's Hospital Melbourne.

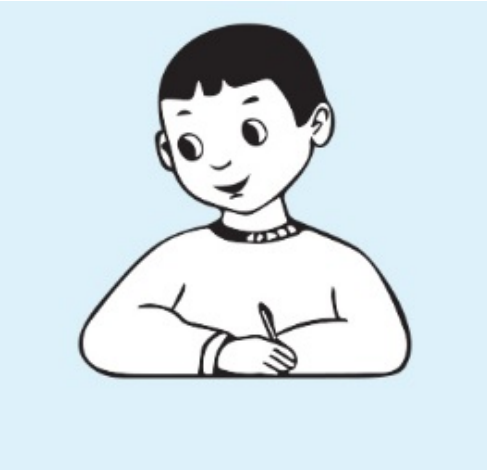
Manual ability

At least two thirds of children with cerebral palsy will have movement difficulties affecting one or both arms. Almost every daily activity can be impacted.

Eating



Dressing



Writing

Catching a ball

The ability of children from 4–18 years old with cerebral palsy to handle objects in everyday activities can be categorised into 5 levels using the Manual Ability Classification System (MACS). More details at www.macs.nu/index.php

Associated impairments

Children with CP may also have a range of physical and cognitive impairments

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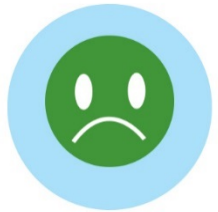
1 in 3
is unable to walk

1 in 4
is unable to talk

3 in 4
experience pain

1 in 4
has epilepsy



1 in 4
has a behaviour problem

1 in 2
has an intellectual disability

1 in 10
has a severe vision impairment

1 in 4
has bladder control problems

1 in 5
has a sleep disorder

1 in 5
has saliva control problems

Focus for child development

The 'F-words' focus on six key areas of child development that are vital to all children with CP.

More details at https://www.canchild.ca/en/research-in-practice/f-words-in-childhood-disability

Treatment considerations

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PAIN

3 in 4: Treat to prevent sleep and behavioural disorders

HIP DISPLACEMENT

1 in 3: 6-12 months hip surveillance using x-ray

INTELLECTUAL DISABILITY

1 in 2: Poorer prognosis for ambulation, continence, academics

NON-VERBAL

1 in 4: Augment speech early

NON-AMBULANT

1 in 3: Independent sitting at 2 years predicts ambulation

EPILEPSY

1 in 4: Seizures will resolve for 10-20% of children

Treatment considerations (cont.)

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BEHAVIOUR DISORDER

1 in 4: Treat early and ensure that pain is managed

BLINDNESS

1 in 10: Assess early and accommodate

BLADDER INCONTINENCE

1 in 4: Conduct investigations and allow more time

NON-ORAL FEEDING

1 in 15: Assess swallow safety and monitor growth

SLEEP DISORDER

1 in 5: Conduct investigations and ensure pain is managed

DEAFNESS

1 in 25: Assess early and accommodate

Future

- **With the support of parents, families, communities, governments and health professionals**, children with cerebral palsy will lead healthy and contributing lives
- The **future is bright**, with international efforts to collaborate in research, practice, education, technology and social action by, and for, people with CP
- **Join World Cerebral Palsy Day** and become part of this global community to improve the lives of people with CP around the world.

WORLD CEREBRAL PALSY DAY – WEDNESDAY OCTOBER 5, 2016

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