CONDITION

Cerebral palsy

Learn how cerebral palsy affects movement and posture, how it is diagnosed, and how therapy, medicines, equipment, and ongoing care can support daily life.

WHAT IT IS
Lifelong conditions affecting movement and posture

BODY SYSTEM
Nervous system

MAIN SYMPTOMS
Muscle stiffness, poor coordination, involuntary movements, balance problems

WHAT CAUSES IT
Developing brain difference or injury

HOW IT IS DIAGNOSED
Developmental assessment and physical examination

MAIN TREATMENT
Rehabilitation and multidisciplinary supportive care

CAN IT BE CURED?
No, original brain injury remains

IS IT AN EMERGENCY?
Sometimes, severe breathing trouble or prolonged seizures

LONG-TERM OUTLOOK
Lifelong with widely varying support needs

Overview

Cerebral palsy, often called CP, is a group of lifelong conditions that affect movement, posture, balance, and coordination. It results from a difference in or injury to the developing brain. The brain change occurs before birth, during birth, or in early childhood.

The original brain injury does not keep getting worse. However, the effects of cerebral palsy can change as a person grows. Tight muscles may lead to joint problems, for example, and the physical demands of walking may become more tiring in adulthood.

Cerebral palsy affects people in different ways. Some people walk independently and need little assistance. Others use mobility equipment and need help with many daily activities. CP may affect one side of the body, mainly the legs, or the whole body.

Doctors often describe CP by its main movement pattern:

Some people also have epilepsy, learning difficulties, speech problems, pain, or vision and hearing conditions. Intelligence is not determined by a person's ability to speak, walk, or control movement. Appropriate communication support is important when assessing understanding and abilities.

- Spastic cerebral palsy causes stiff or tight muscles and is the most common pattern.
- Dyskinetic cerebral palsy causes involuntary, twisting, or repeated movements.
- Ataxic cerebral palsy mainly affects balance, depth perception, and coordination.
- Mixed cerebral palsy includes features of more than one pattern.

Symptoms

Signs vary with age and with the areas of the body affected. In babies, possible signs include unusual muscle stiffness or floppiness, difficulty controlling the head, feeding problems, or delays in movement skills. A baby may reach with one hand much more than the other, drag one side while crawling, or move the legs in a stiff or scissoring pattern.

Older children and adults may have:

Muscle tone means the amount of tension in a muscle at rest. In spasticity, muscle tone is higher than expected and muscles may resist being stretched. Dystonia is a different movement problem in which muscles contract involuntarily, causing twisting movements or abnormal postures. A person can have both.

CP may occur with conditions that are not directly related to movement. These include seizures, constipation, sleep problems, reflux, breathing problems, behavioral or emotional concerns, and differences in vision, hearing, sensation, or learning.

A delay in one skill does not by itself establish cerebral palsy. Children develop at different rates, and many other conditions can affect movement. Developmental concerns should be discussed with a health professional rather than watched indefinitely.

- Tight, weak, or poorly coordinated muscles
- Unusual walking patterns, such as toe walking or crouched walking
- Involuntary movements or muscle spasms
- Difficulty with balance and precise hand movements
- Problems speaking clearly or controlling saliva

- Difficulty chewing or swallowing
- Pain, fatigue, or reduced endurance

Causes and risk factors

Cerebral palsy develops when parts of the brain responsible for movement and posture do not form as expected or are injured early in life. In many cases, no single cause can be identified.

Brain development differences, genetic conditions, fetal stroke, or infections during pregnancy can contribute. Reduced oxygen or blood flow may also injure the developing brain, but most cerebral palsy is not explained by a single lack-of-oxygen event during labor.

Factors associated with a higher chance of CP include premature birth, very low birth weight, multiple pregnancy, serious newborn illness, and severe untreated jaundice. Jaundice is a buildup of bilirubin that causes yellow skin and eyes; at very high levels, bilirubin can damage the brain.

After birth, cerebral palsy may result from meningitis, encephalitis, stroke, serious head injury, or another event that damages the brain during early development. This is sometimes called acquired cerebral palsy.

A risk factor does not mean a child will develop CP. Many children with one or more risk factors do not. Likewise, CP can occur without an obvious pregnancy or birth complication. It is not contagious, and it is not caused by something a parent did during routine care.

Diagnosis

There is no single blood test for cerebral palsy. Diagnosis is based on medical history, developmental progress, movement patterns, muscle tone, reflexes, posture, and physical examination.

Health professionals monitor how a child reaches movement milestones, such as head control, rolling, sitting, standing, and walking. For children born early, development is usually considered using corrected age during early childhood. Corrected age accounts for the number of weeks the child was born before the expected due date.

Children at higher risk may have structured movement and neurological assessments during infancy. These can identify patterns associated with CP before all movement delays are obvious. Early recognition matters because therapy and family support can begin while the diagnosis is being clarified.

Magnetic resonance imaging, or MRI, may be used to look at the brain's structure and possible areas of injury. MRI findings can support the diagnosis, but a normal or unclear scan does not always rule out CP. Other tests may be considered if the history or examination suggests a genetic, metabolic, muscle, or nerve condition.

The care team may also assess vision, hearing, communication, learning, nutrition, swallowing, and seizure risk. Standard classification systems can describe how a person moves, uses their hands, eats, or communicates. These systems help with care planning; they are not measures of personal worth or future potential.

Loss of previously gained abilities is not typical of cerebral palsy. If skills are being lost, clinicians usually look for another or an additional condition.

Treatment and management

There is no treatment that removes the original brain injury. Management focuses on participation, comfort, independence, communication, and prevention of avoidable complications. Goals should reflect what matters to the person and family, such as easier dressing, less pain, safer eating, improved communication, or access to school and work.

Care often involves a coordinated team. Depending on individual needs, this may include primary care clinicians, rehabilitation specialists, neurologists, orthopedic surgeons, therapists, dietitians, psychologists, nurses, teachers, and social workers.

Physical therapy can support strength, flexibility, balance, transfers, and mobility. A therapist may recommend positioning, stretching, physical activity, or practice of specific movement skills. Occupational therapy focuses on daily activities such as eating, dressing, writing, play, and using technology.

Speech and language therapy may address speech, language, communication, and swallowing. Some people use picture boards, switches, eye-gaze systems, tablets, or other augmentative and alternative communication. These tools can supplement speech or provide another way to communicate.

Braces, supportive seating, walkers, standing equipment, and wheelchairs may improve alignment, safety, comfort, or access to activities. A wheelchair can conserve energy and increase independence, including for someone who can also walk.

Medicines may be considered when muscle stiffness, spasms, dystonia, pain, or seizures interfere with comfort or function. Options for muscle tone include oral medicines, botulinum toxin injections into selected muscles, or medicine delivered through an implanted pump. Benefits and possible effects such as sleepiness, weakness, or swallowing difficulty need to be

reviewed with the treating team.

Orthopedic surgery may be used to improve joint position, relieve pain, or treat fixed shortening of muscles and tendons. Selective dorsal rhizotomy, an operation on certain sensory nerves near the spinal cord, may reduce leg spasticity in carefully selected patients. These procedures require detailed assessment and rehabilitation; they are not appropriate for everyone.

Nutrition support may include changes in food texture, seating during meals, treatment of reflux or constipation, or tube feeding when eating by mouth is unsafe or does not provide enough nutrition. Tube feeding can be used alongside safe oral eating when appropriate.

Regular physical activity should be adapted to the person's interests and abilities. It can support fitness, sleep, bone health, and emotional well-being. Treatment plans should be reviewed over time because goals and physical needs change with growth, aging, education, employment, and living arrangements.

Complications

Abnormal muscle forces can gradually affect bones and joints. Possible problems include hip displacement, scoliosis, joint stiffness, and contractures. A contracture is a fixed shortening of muscles or other tissues that limits movement. Hip surveillance programs use regular examinations and X-rays for children at risk, sometimes before pain begins.

Swallowing difficulty can lead to poor growth, dehydration, long mealtimes, or food and liquid entering the airway. This is called aspiration and may contribute to repeated chest infections. Reduced movement, difficulty bearing weight, and some seizure medicines can affect bone strength.

Pain and fatigue are common concerns but may be missed when a person communicates without speech. Changes in sleep, behavior, movement, appetite, or participation may be signs of discomfort. Dental problems, skin pressure injuries, constipation, anxiety, and depression also deserve attention.

These complications are possible, not inevitable. Regular assessment and early management can often reduce their effect on daily life.

Follow up

Routine follow-up should address movement, comfort, equipment, nutrition, communication, learning, sleep, emotional health, and participation at home, school, work, and in the

community. Children may need closer review during growth spurts. Adults may need reassessment if pain, fatigue, mobility, caregiving needs, or living circumstances change.

Equipment and braces should be checked for fit. Seizure treatment, muscle-tone treatment, and feeding plans should be reviewed for benefit and unwanted effects. Preventive care such as vaccinations, dental care, vision testing, and age-appropriate health screening remains important.

Contact a clinician promptly for new or increasing pain, reduced mobility, worsening swallowing, repeated coughing during meals, unexplained weight change, new seizures, loss of skills, or a major change in alertness or behavior.

Seek emergency help for severe trouble breathing, blue or gray skin, serious choking, a major injury, or a seizure lasting longer than the person's emergency plan allows. Emergency care is also appropriate for repeated seizures without recovery between them. Families of people with epilepsy should follow their individualized seizure action plan.

Sources

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