Cerebral Palsy

Cerebral palsy refers to a group of conditions that affect control of movement and posture. Due to damage to one or more parts of the brain that control movement, an affected person cannot move his or her muscles normally. Symptoms range from mild to severe, including forms of paralysis.

With treatment, most children can significantly improve their abilities. Although symptoms may change over time, cerebral palsy by definition is not progressive, so if increased impairment occurs, the problem may be something other than cerebral palsy.

Many children with cerebral palsy have other problems that require treatment. These include intellectual disabilities; learning disabilities; seizures; and vision, hearing and speech problems.
Cerebral palsy usually is not diagnosed until a child is about 2 to 3 years of age. About 2 to 3 children in 1,000 over the age of three have cerebral palsy. About 500,000 children and adults of all ages in this country have cerebral palsy.

The three major types of cerebral palsy:

**Spastic cerebral palsy.** About 70 to 80 percent of affected individuals have spastic cerebral palsy, in which muscles are stiff, making movement difficult. When both legs are affected (spastic diplegia), a child may have difficulty walking because tight muscles in the hips and legs cause legs to turn inward and cross at the knees (called scissoring). In other cases, only one side of the body is affected (spastic hemiplegia), often with the arm more severely affected than the leg. Most severe is spastic quadriplegia, in which all four limbs and the trunk are affected, often along with the muscles controlling the mouth and tongue. Children with spastic quadriplegia have intellectual disabilities and other problems.

**Dyskinetic cerebral palsy.** About 10 to 20 percent have the dyskinetic form, which affects the entire body. It is characterized by fluctuations in muscle tone (varying from too tight to too loose) and sometimes is associated with uncontrolled movements (which can be slow and writhing or rapid and jerky). Children often have trouble learning to control their bodies well enough to sit and walk. Because muscles of the face and tongue can be affected, there also can be difficulties with sucking, swallowing and speech.

**Ataxic cerebral palsy.** About 5 to 10 percent have the ataxic form, which affects balance and coordination. They may walk with an unsteady gait and have difficulty with motions that require precise coordination, such as writing.

There are many things that occur during pregnancy and around the time of birth that can disrupt the normal development of the brain and result in cerebral palsy. In about 70 percent of cases, brain damage occurs before birth, although it also occurs around the time of delivery, or in the first months or years of life.

Some of the known causes include:

**Infections during pregnancy.** Certain infections in the mother, including rubella (German measles), cytomegalovirus (a mild viral infection), and toxoplasmosis (a mild parasitic infection) can cause brain damage and result in cerebral palsy.

**Insufficient oxygen reaching the fetus.** For example, when the placenta is not functioning properly or it tears away from the wall of the uterus before delivery, the fetus may not receive sufficient oxygen.

**Prematurity.** Premature babies who weigh less than 3 1/3 pounds are up to 30 times more likely to develop cerebral palsy than full-term babies.
Complications of labor and delivery. Until recently, doctors believed that asphyxia (lack of oxygen) during a difficult delivery was the cause of most cases of cerebral palsy. Recent studies show that this causes only about 10 percent of cases.

Rh disease. This incompatibility between the blood of the mother and her fetus can cause brain damage, resulting in cerebral palsy. Fortunately, Rh disease usually can be prevented by giving an Rh-negative woman an injection of a blood product called Rh immune globulin around the 28th week of pregnancy and again after the birth of an Rh-positive baby.

Other birth defects. Babies with brain malformations, numerous genetic diseases, chromosomal abnormalities, and other physical birth defects are at increased risk of cerebral palsy.

Acquired cerebral palsy. About 10 percent of children with cerebral palsy acquire it after birth due to brain injuries that occur during the first two years of life. The most common causes of such injuries are brain infections (such as meningitis) and head injuries.

Cerebral palsy is diagnosed mainly by evaluating how a baby or young child moves. Some children with CP have low muscle tone, which can make them appear floppy. Others have increased muscle tone, which makes them appear stiff, or variable muscle tone (increased at times and low at other times).

The doctor also may suggest brain-imaging tests such as magnetic resonance imaging (MRI), computed tomography (CT scan), or ultrasound. These tests sometimes can help identify the cause of cerebral palsy.

How is cerebral palsy treated?

A team of health care professionals works with the child and family to identify the child’s needs. The team may include pediatricians, physical medicine and rehabilitation physicians, orthopedic surgeons, physical and occupational therapists, ophthalmologists, speech/language pathologists, and social workers and psychologists.

The child usually begins physical therapy soon after diagnosis. This enhances motor skills (such as sitting and walking), improves muscle strength, and helps prevent contractures (shortening of muscles that limits joint movement). Sometimes braces, splints or casts are used along with therapy to help prevent contractures and improve function of the hands or legs. If contractures are severe, surgery may be recommended to lengthen affected muscles.

Drugs may be used to ease spasticity or to reduce abnormal movement. Unfortunately, oral drug treatment is often not very helpful. Sometimes injection of drugs directly into spastic muscles is more helpful, and the effects may last several months. A new type of drug treatment is showing promise in children with moderate to severe spasticity.
affecting all four limbs. During a surgical procedure, a pump is implanted under the skin that continuously delivers the anti-spasmodic drug baclofen.

For some children with spasticity affecting both legs, selective dorsal rhizotomy may permanently reduce spasticity and improve the ability to sit, stand and walk. In this procedure, doctors cut some of the nerve fibers that are contributing most to spasticity. This procedure usually is done when a child is between 2 and 6 years of age.

Research suggests that cerebral palsy results from incorrect cell development early in pregnancy. For example, a group of researchers has recently observed that more than one-third of children with cerebral palsy also have missing enamel on certain teeth. Scientists are also examining other events -- such as bleeding in the brain, seizures, and breathing and circulation problems -- that threaten the brain of a newborn baby. Some investigators are conducting studies to learn whether certain drugs can help prevent neonatal stroke, and other investigators are examining the causes of low birth-weight. Other scientists are exploring how brain insults (like brain damage from a shortage of oxygen or blood flow, bleeding in the brain, and seizures) can cause the abnormal release of brain chemicals and trigger brain disease.

Sources: United Cerebral Palsy, March of Dimes, National Institute of Neurological Disorders and Stroke


**Web Sites**

[http://www.ucp.org](http://www.ucp.org)

**United Cerebral Palsy (UCP)**
1825 K Street NW, Suite 600
Washington, DC 20006
Phone: 202-776-0406, 800-872-5827 (Toll-free)
E-mail: [info@ucp.org](mailto:info@ucp.org)
UCP's mission is to advance the independence, productivity, and full citizenship of people with cerebral palsy and other disabilities, through a commitment to the principles of independence, inclusion, and self-determination. UCP affiliates throughout the world provide services and support on a community-by-community basis, serving the unique needs of people with disabilities in their region.

[http://gait.aidi.udel.edu/gaitlab/cpGuide.html](http://gait.aidi.udel.edu/gaitlab/cpGuide.html)

**Alfred I. duPont Hospital for Children, Gait Analysis Laboratory: Cerebral Palsy Program/Guide**

This guide contains an overview of cerebral palsy in infants and children, including causes, diagnosis, types, prognosis, treatment, and associated medical problems. It
contains an overview of material discussed in much more depth in Bachrach Miller’s book *Cerebral Palsy: A Guide for Care.*

http://www.aacpdm.org/
The American Academy for Cerebral Palsy and Developmental Medicine (AACPDM)
555 East Wells, Suite 1100
Milwaukee, WI 53202
Phone: 414-918-3014
E-mail: info@AACPDM.org
AACPDM is a multidisciplinary scientific society devoted to the study of cerebral palsy and other childhood onset disabilities, to promoting professional education for the treatment and management of these conditions, and to improving the quality of life for people with these disabilities. The scope of the Academy's interests has expanded from an initial focus on cerebral palsy into related areas of developmental medicine, including spina bifida, neuromuscular disease, traumatic brain injury and other acquired disabilities, genetic disorders, communications problems, and specific learning disabilities.

www.yourcpf.org
Cerebral Palsy Foundation (CPF)
3 Columbus Circle, 15th Floor
New York, NY 10019
Phone: 212-520-1686
Email: info@yourcpf.org
CPF is focused on research for CP and also has fact sheets and product suggestions for people living with CP.

https://cerebralpalsygrouop.com/
Cerebral Palsy Group
13506 Summerport Village Parkway
Windermere, FL 34786
Phone: 866-510-0717
The Cerebral Palsy Group is dedicated to providing information, material and resources that is available to both families as well as those who have been diagnosed with cerebral palsy.

http://www.thecpgroup.org
The Cerebral Palsy Group
15520 Bald Eagle School Road
Brandywine, MD 20613
Phone: 301-888-1177
Email: info@thecpgroup.org
This site has information for those with CP as well as an online forum where messages and questions can be exchanged.
This organization shares educational materials to families and individuals affected by cerebral palsy, including information about different therapies, treatment options, and financial resources.

The Cerebral Palsy Center at St. Louis Children’s Hospital
One Children’s Place
St. Louis, MO 63110
Phone: 314-454-2813
Toll-free: 800-416-9956
The Center is known for its spasticity management program using rhizotomy.

CPISRA is committed to enhancing the opportunities for people with cerebral palsy or a related neurological condition to participate in the sport or leisure activity of their choosing.

Providing people with disabilities customized services, supports and technologies, with an emphasis on employment and training options, to facilitate their chosen economic and personal independence.

Their mission is to optimize the health, wellness and participation of people with cerebral palsy and their families throughout the lifespan. They create educational resources,
initiate wellness campaigns and fund research focused on addressing the early interferences in brain development which can lead to CP. They also highlight and support research for associated conditions that may interfere with learning or participation in society. They sell a Cerebral Palsy Tool Kit.

https://www.curecp.org/
Cure CP
PO Box 19995
Atlanta, GA 30325
Offers information on CP as well as clinical trials.

KidsHealth: Cerebral Palsy
This page has information on cerebral palsy written for children.

http://www.marchofdimes.com/
March of Dimes
National Office
1550 Crystal Dr.
Arlington, VA 22202
Phone: 888-663-4637
The March of Dimes works to help mothers have full-term pregnancies and to research problems that threaten babies’ health. The site offers a lot of information on birth defects, including spina bifida. The organization has local chapters in all 50 states and Puerto Rico that offer a variety of resources.

MedlinePlus: Cerebral Palsy
This page has links to resources for learning more about and living with cerebral palsy. Some resources are available in Spanish.

National Institute of Neurological Disorders and Stroke (NINDS): Cerebral Palsy
This page has information on cerebral palsy, including treatment, prognosis, research, and links to additional resources.

National Institute of Neurological Disorders and Stroke (NINDS): Cerebral Palsy: Hope Through Research booklet

http://www.reachingforthestars.org
Reaching for the Stars, Inc. (RFTS)
3000 Old Alabama Road, Suite 119-300
Alpharetta, GA 30022
Phone: 855-240-3787 (Toll-free)
E-mail: info@reachingforthestars.org
A non-profit organization started by and for parents of children with cerebral palsy, RFTS is committed to advocacy, education and driving research to serve the needs of children with cerebral palsy and those families and care givers involved in their care.

http://www.latexfreeswimsuit.com/
Suits Me Swimwear
Phone: 352-666-1485
Suits Me makes latex-free swimwear.

https://www.uclahealth.org/ccp/
UCLA/Orthopaedic Hospital Center for Cerebral Palsy
1225 15th St.
Santa Monica, CA 90404
Phone: 424-259-6593
The Center is an interdisciplinary clinic that evaluates and treats people with cerebral palsy throughout the lifespan.

https://www.uhms.org/
Undersea and Hyperbaric Medical Society (UHMS)
631 US Highway 1, Suite 307
North Palm Beach, FL 33408
Phone: 919-490-5140, 877-533-8467 (Toll-free)
E-mail: uhms@uhms.org
UHMS provides information to improve the scientific basis of hyperbaric oxygen therapy. There are more than 2,400 hyperbaric scientist and physician members around the world.

Internet Forums/Message Boards

http://www.thecpgroup.org
The CP Group
This site has message boards.

The information contained in this message is presented for the purpose of educating and informing you about paralysis and its effects. Nothing contained in this message should be construed nor is intended to be used for medical diagnosis or treatment. It should not be used in place of the advice of your physician or other qualified health care provider. Should you have any health care related questions, please call or see your physician or other qualified health care provider promptly. Always consult with your physician or other qualified health care provider before embarking on a new treatment, diet or fitness program. You should never disregard medical advice or delay in seeking it because of something you have read in this message.
This publication is supported by the Administration for Community Living (ACL), U.S. Department of Health and Human Services (HHS) as part of a financial assistance award totaling $8,700,000 with 100 percent funding by ACL/HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by ACL/HHS, or the U.S. Government.