

# Cerebral Palsy Information



The following information was extracted from the Mayo Clinic's website

## Definition:

"Cerebral palsy" is a general term for a group of disorders that appear during the first few years of life and affect a child's ability to coordinate body movements. Cerebral palsy can cause muscles to be weak and floppy, or rigid and stiff. In Europe and the United States, cerebral palsy occurs in about two to four out of every 1,000 births. Babies born prematurely or at low birth weights are at higher risk. The disorder is usually caused by brain injuries that occur early in the course of development. Cerebral palsy isn't curable. However, getting the right therapy for your child can make a big difference.

## Symptoms

In general, children with cerebral palsy exhibit a wide variety of signs and symptoms, ranging from mild to severe. They may include:

- Lack of muscle coordination when performing voluntary movements (ataxia)
- Stiff muscles and exaggerated reflexes (spasticity)
- Asymmetrical walking gait, with one foot or leg dragging
- Variations in muscle tone, from too stiff to too floppy
- Excessive drooling or difficulties swallowing, sucking or speaking
- Tremors
- Difficulty with precise motions, such as writing or buttoning a shirt

The brain injury causing cerebral palsy doesn't change with time, so the symptoms usually don't worsen with age. Other neurological disorders — such as mental retardation or seizures — also may occur in children with cerebral palsy.

**Causes: Most cases of cerebral palsy are believed to be caused by problems that occur before the baby is born, although some cases have been linked to brain injuries or infections during the first few months or years of life. Doctors can't always determine the root cause of the brain damage that results in cerebral palsy. Potential causes include:**

**Infections:** Cerebral palsy has been linked to a variety of infectious diseases occurring either in the mother during pregnancy or in the infant during the first few months of life. Maternal illnesses that have been linked to cerebral palsy include:

- **German measles (rubella).** Also known as "three-day measles," rubella can be prevented with a vaccine.
- **Chickenpox (varicella).** Associated with the later development of shingles, chickenpox can be prevented with a vaccine.
- **Cytomegalovirus.** Up to 80 percent of the population has been infected with this virus, which causes flu-like symptoms, by the age of 40. Most people have mild symptoms that come and

go throughout their lives. If a woman experiences her first bout of cytomegalovirus during pregnancy, it may cause birth defects.

- **Toxoplasmosis.** A parasite found in the soil and in the feces of infected cats, toxoplasmosis can harm the fetuses of women who are infected during pregnancy.
- **Syphilis.** A sexually transmitted disease, syphilis can harm the fetuses of infected women.

Infant illnesses that have been linked to cerebral palsy include:

- **Meningitis.** Meningitis causes inflammation in the membranes that surround the brain and spinal cord. The bacterial form of the disease is the most dangerous.
- **Viral encephalitis.** Encephalitis causes inflammation in the brain itself. Viral encephalitis is the most common variety.

### **Congenital abnormalities**

Some children have cerebral palsy because their brains didn't develop properly while in the womb. In most cases, doctors don't know why this happens. In some instances, however, mutations in the genes responsible for brain development can prevent the brain from developing normally. Exposure to toxins, radiation or infections increases the risk.

### **Strokes**

Although strokes are more commonly associated with older people, they can happen at any age — even before birth. Strokes can occur when clots in the placenta interrupt the flow of blood to the baby. Strokes can also occur if malformed or weak blood vessels leak blood into the brain.

### **Lack of oxygen**

For many years, doctors and researchers believed that cerebral palsy was caused by a lack of oxygen during birth. Now they believe that only a small number of cases are caused by problems during labor and delivery.

### **Severe jaundice**

Jaundice is common in newborns. But severe cases of untreated jaundice can harm the brain permanently and may result in cerebral palsy.

### **Risk factors:**

**Most children with cerebral palsy don't have any apparent problems during development in the womb and birth. But some factors may increase the risk of cerebral palsy:**

- **Premature birth.** A normal pregnancy lasts 40 weeks. Babies who are born less than 37 weeks into the pregnancy are at higher risk of cerebral palsy. The earlier the baby is born, the greater the risk of cerebral palsy.
- **Low birth weight.** Babies who weigh less than 5.5 pounds (2.5 kilograms) are at higher risk of developing cerebral palsy. This risk increases as birth weight falls.
- **Breech births.** Babies who are in a feet-first position (breech presentation) at the beginning of labor are more likely to have cerebral palsy.
- **Multiple babies.** The risk of cerebral palsy increases with the number of babies sharing the uterus. If one or more of the other babies die, the chances that the survivors may develop cerebral palsy increase.

- **Toxic substances.** Babies whose mothers were exposed to toxins, such as mercury, during pregnancy are at higher risk of having cerebral palsy.
- **Mother's health.** Women who have thyroid problems, mental retardation or seizures are at higher risk of having a baby with cerebral palsy.

## Complications

Besides difficulty with movement and posture, cerebral palsy may result in:

- **Contractures.** This condition occurs when the muscles pull so tightly on the bones that the affected limb curls in. Severe contractures can result in joint deformities or dislocation.
- **Malnutrition.** Swallowing or feeding problems can make it difficult for someone who has cerebral palsy, particularly an infant, to get enough nutrition.

Some children with cerebral palsy will have multiple handicaps and may require long term care. Some of the associated problems may include:

- Difficulty with vision, hearing and speech
- Dental problems
- Mental retardation
- Seizures
- Abnormal sensation or perception

## Preparing for your appointment

While you might first discuss your child's symptoms with your family doctor, he or she will probably refer you to a neurologist for further evaluation.

### What you can do

Because appointments can be brief, plan ahead and write a list that includes:

- Detailed descriptions of your child's symptoms
- Questions you want to ask the doctor

### What to expect from your doctor

In addition to a physical exam, your doctor may also check your child's neurological health by testing his or her:

- Reflexes
- Muscle strength
- Muscle tone
- Senses of touch and sight
- Coordination
- Balance

Your child may also be screened for:

- Mental retardation

- Vision problems
- Hearing impairment
- Speech and language disorders
- Urinary incontinence

## Tests and diagnosis

Early signs of cerebral palsy may be present from birth. But if signs and symptoms are mild, it may be difficult to make a definite diagnosis before the age of 4 or 5. In most cases, cerebral palsy is diagnosed by age 1 or 2.

Diagnostic tests may include:

### Brain scans

If your baby is born prematurely and is at high risk of cerebral palsy, your doctor may suggest a cranial ultrasound because it is the least intrusive of the imaging techniques used to visualize the brain. Cranial ultrasound, however, provides a less detailed image than does a CT scan or an MRI. An MRI reveals the most details, which help determine a cause and a prognosis.

- **Cranial ultrasound.** This test uses high frequency sound waves to obtain images of the soft tissues inside the skull. Cranial ultrasound is painless and takes between 15 and 30 minutes to complete.
- **CT scan.** This test uses a computer to combine X-ray images taken from many different angles to produce cross-sectional views of your child's brain. Scanning is painless and takes about 30 minutes. If your child can't hold still for the scanning, he or she may be given a light sedative.
- **MRI.** Using radio waves and a powerful magnet, an MRI can produce detailed images of the brain. This test is painless, but it is noisy and can take up to an hour to complete. If your child can't hold still long enough for this test, he or she may be given a sedative.

### Electroencephalogram (EEG)

If your child has had seizures, your doctor may recommend an electroencephalogram (EEG) to check for epilepsy. In an EEG test, a series of electrodes must be affixed to your child's scalp. The procedure is painless and records the electrical activity inside your child's brain.

### Lab tests

Your child's blood may need to be checked to help rule out other conditions — such as blood-clotting disorders that can cause strokes — that may mimic cerebral palsy signs and symptoms. Lab tests may also screen for genetic or metabolic problems.

## Treatments and drugs

The brain abnormality or damage that underlies cerebral palsy doesn't worsen with time, but children with cerebral palsy often require long term care. The type and amount of treatment depend on how many problems your child has and how severe they are.

### Medications

- **Muscle relaxants.** Oral medications — such as diazepam, baclofen, dantrolene and tizanidine — are usually the first option to relax stiff, contracted muscles. Side effects may include

drowsiness and upset stomach. Baclofen can also be delivered directly to the fluid surrounding the spinal cord via a pump surgically implanted into the abdomen.

- **Botulinum toxin type A (Botox).** Injections of botulinum toxin directly into spastic muscles also can help relieve the muscle spasms and contractures common to cerebral palsy. However, these injections have, in rare instances, caused serious problems with swallowing and breathing, particularly in children with cerebral palsy.

## Therapies

- **Physical therapy.** Muscle training and exercises may help your child's strength, flexibility, balance, motor development and mobility. Braces or splints may be recommended for your child. Some of these supports are used to help with function, such as improved walking. Others may stretch stiff muscles to help prevent contractures.
- **Occupational therapy.** Using alternative strategies and adaptive equipment, occupational therapists work to promote your child's independent participation in daily activities and routines in the home, school and community. They may also address difficulties with feeding and swallowing.
- **Speech therapy.** Speech therapists help improve your child's ability to speak clearly or to communicate using sign language. They can also teach your child to use special communication devices — such as a board covered with pictures of everyday items and activities. Sentences can be constructed by pointing to the pictures.

## Surgical or other procedures

- **Orthopedic.** Children with severe contractures or deformities may need surgery on tendons, bones or joints to place their arms and legs in their correct positions. This can make it easier to use a walker, braces or crutches.
- **Severing nerves.** In some severe cases, when other treatments haven't helped, surgeons may cut the nerves serving the spastic muscles. This relaxes the muscle and reduces pain, but can also cause numbness.

## Coping and support

When a child is diagnosed with a disabling condition, the whole family faces new challenges. Here are a few tips for caring for your child and yourself:

- **Foster your child's independence.** Encourage any effort at independence, no matter how small. Just because you can do something faster and quicker doesn't mean you should.
- **Be an advocate for your child.** You are an important part of your child's health care team. Don't be afraid to speak out on your child's behalf or to ask tough questions of your physicians, therapists and teachers.
- **Find support.** A circle of support can make a big difference in helping you cope with cerebral palsy and its effects. As a parent, you may feel grief and guilt over your child's disability. Your doctor can help you locate support groups, organizations and counseling services in your community. Your child may benefit from family support programs, school programs and counseling.

## Prevention

Most cases of cerebral palsy can't be prevented, despite the best efforts of parents and doctors. But, if you're pregnant, you can take these steps to keep healthy and minimize the possibility of pregnancy complications:

- **Make sure you're immunized.** Immunization against diseases such as rubella may prevent an infection that could cause fetal brain damage.
- **Take care of yourself.** The healthier you are heading into a pregnancy, the less likely you'll be to develop an infection that may result in cerebral palsy.
- **Seek early and continuous prenatal care.** Regular visits to your doctor during your pregnancy are a good way to reduce health risks to you and your unborn baby. Seeing your doctor regularly can help prevent premature birth, low birth weight and infections.