## Sengamala Thayaar Educational Trust Women’s College

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**DIETETICS**

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**DIETETICS**

**Definition- ADHD**

Attention-deficit/hyperactivity disorder (ADHD) is a brain disorder marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development.

* **Inattention** means a person wanders off task, lacks persistence, has difficulty sustaining focus, and is disorganized; and these problems are not due to defiance or lack of comprehension.
* **Hyperactivity**means a person seems to move about constantly, including in situations in which it is not appropriate; or excessively fidgets, taps, or talks. In adults, it may be extreme restlessness or wearing others out with constant activity.
* **Impulsivity** means a person makes hasty actions that occur in the moment without first thinking about them and that may have high potential for harm; or a desire for immediate rewards or inability to delay gratification. An impulsive person may be socially intrusive and excessively interrupt others or make important decisions without considering the long-term consequences.

Signs and Symptoms

Inattention and hyperactivity/impulsivity are the key behaviors of ADHD. Some people with ADHD only have problems with one of the behaviors, while others have both inattention and hyperactivity-impulsivity.Most children have the combined type of ADHD.

In preschool, the most common ADHD symptom is hyperactivity.

It is normal to have some inattention, unfocused motor activity and impulsivity, but for people with ADHD, these behaviors:

* are more severe
* occur more often
* interfere with or reduce the quality of how they functions socially, at school, or in a job

Inattention

People with symptoms of inattention may often:

* Overlook or miss details, make careless mistakes in schoolwork, at work, or during other activities
* Have problems sustaining attention in tasks or play, including conversations, lectures, or lengthy reading
* Not seem to listen when spoken to directly
* Not follow through on instructions and fail to finish schoolwork, chores, or duties in the workplace or start tasks but quickly lose focus and get easily sidetracked
* Have problems organizing tasks and activities, such as what to do in sequence, keeping materials and belongings in order, having messy work and poor time management, and failing to meet deadlines
* Avoid or dislike tasks that require sustained mental effort, such as schoolwork or homework, or for teens and older adults, preparing reports, completing forms or reviewing lengthy papers
* Lose things necessary for tasks or activities, such as school supplies, pencils, books, tools, wallets, keys, paperwork, eyeglasses, and cell phones
* Be easily distracted by unrelated thoughts or stimuli
* Be forgetful in daily activities, such as chores, errands, returning calls, and keeping appointments

Hyperactivity-Impulsivity

People with symptoms of hyperactivity-impulsivity may often:

* Fidget and squirm in their seats
* Leave their seats in situations when staying seated is expected, such as in the classroom or in the office
* Run or dash around or climb in situations where it is inappropriate or, in teens and adults, often feel restless
* Be unable to play or engage in hobbies quietly
* Be constantly in motion or “on the go,” or act as if “driven by a motor”
* Talk nonstop
* Blurt out an answer before a question has been completed, finish other people’s sentences, or speak without waiting for a turn in conversation
* Have trouble waiting his or her turn
* Interrupt or intrude on others, for example in conversations, games, or activities

Diagnosis of ADHD requires a comprehensive evaluation by a licensed clinician, such as a pediatrician, psychologist, or psychiatrist with expertise in ADHD. For a person to receive a diagnosis of ADHD, the symptoms of inattention and/or hyperactivity-impulsivity must be chronic or long-lasting, impair the person’s functioning, and cause the person to fall behind normal development for his or her age. The doctor will also ensure that any ADHD symptoms are not due to another medical or psychiatric condition. Most children with ADHD receive a diagnosis during the elementary school years. For an adolescent or adult to receive a diagnosis of ADHD, the symptoms need to have been present prior to age 12.

ADHD symptoms can appear as early as between the ages of 3 and 6 and can continue through adolescence and adulthood. Symptoms of ADHD can be mistaken for emotional or disciplinary problems or missed entirely in quiet, well-behaved children, leading to a delay in diagnosis. Adults with undiagnosed ADHD may have a history of poor academic performance, problems at work, or difficult or failed relationships.

ADHD symptoms can change over time as a person ages. In young children with ADHD, hyperactivity-impulsivity is the most predominant symptom. As a child reaches elementary school, the symptom of inattention may become more prominent and cause the child to struggle academically. In adolescence, hyperactivity seems to lessen and may show more often as feelings of restlessness or fidgeting, but inattention and impulsivity may remain. Many adolescents with ADHD also struggle with relationships and antisocial behaviors. Inattention, restlessness, and impulsivity tend to persist into adulthood.

Risk Factors

Scientists are not sure what causes ADHD. Like many other illnesses, a number of factors can contribute to ADHD, such as:

* Genes
* Cigarette smoking, alcohol use, or drug use during pregnancy
* Exposure to environmental toxins during pregnancy
* Exposure to environmental toxins, such as high levels of lead, at a young age
* Low birth weight
* Brain injuries

ADHD is more common in males than females, and females with ADHD are more likely to have problems primarily with inattention. Other conditions, such as learning disabilities, anxiety disorder, conduct disorder, depression, and substance abuse, are common in people with ADHD.

Treatment and Therapies

While there is no cure for ADHD, currently available treatments can help reduce symptoms and improve functioning. Treatments include medication, psychotherapy, education or training, or a combination of treatments.

Medication

For many people, ADHD medications reduce hyperactivity and impulsivity and improve their ability to focus, work, and learn. Medication also may improve physical coordination. Sometimes several different medications or dosages must be tried before finding the right one that works for a particular person. Anyone taking medications must be monitored closely and carefully by their prescribing doctor.

**Stimulants.** The most common type of medication used for treating ADHD is called a “stimulant.” Although it may seem unusual to treat ADHD with a medication that is considered a stimulant, it works because it increases the brain chemicals dopamine and norepinephrine, which play essential roles in thinking and attention.

Under medical supervision, stimulant medications are considered safe. However, there are risks and side effects, especially when misused or taken in excess of the prescribed dose.For example, stimulants can raise blood pressure and heart rate and increase anxiety. Therefore, a person with other health problems, including high blood pressure, seizures, heart disease, glaucoma, liver or kidney disease, or an anxiety disorder should tell their doctor before taking a stimulant.

Talk with a doctor if you see any of these side effects while taking stimulants:

* decreased appetite
* sleep problems
* tics (sudden, repetitive movements or sounds);
* personality changes
* increased anxiety and irritability
* stomachaches
* headaches

**Non-stimulants.**A few other ADHD medications are non-stimulants. These medications take longer to start working than stimulants, but can also improve focus, attention, and impulsivity in a person with ADHD. Doctors may prescribe a non-stimulant: when a person has bothersome side effects from stimulants; when a stimulant was not effective; or in combination with a stimulant to increase effectiveness.

Although not approved by the U.S. Food and Drug Administration (FDA) specifically for the treatment of ADHD, some antidepressants are sometimes used alone or in combination with a stimulant to treat ADHD. Antidepressants may help all of the symptoms of ADHD and can be prescribed if a patient has bothersome side effects from stimulants. Antidepressants can be helpful in combination with stimulants if a patient also has another condition, such as an anxiety disorder, depression, or another mood disorder.

Doctors and patients can work together to find the best medication, dose, or medication combination. Learn the basics about stimulants and other mental health medications on the [NIMH Mental Health Medications](https://www.nimh.nih.gov/health/topics/mental-health-medications/index.shtml) webpage and check the FDAwebsite (<http://www.fda.gov/>), for the latest information on warnings, patient medication guides, or newly approved medications.

Psychotherapy

Adding psychotherapy to treat ADHD can help patients and their families to better cope with everyday problems.

**Behavioral therapy** is a type of psychotherapy that aims to help a person change his or her behavior. It might involve practical assistance, such as help organizing tasks or completing schoolwork, or working through emotionally difficult events. Behavioral therapy also teaches a person how to:

* monitor his or her own behavior
* give oneself praise or rewards for acting in a desired way, such as controlling anger or thinking before acting

Parents, teachers, and family members also can give positive or negative feedback for certain behaviors and help establish clear rules, chore lists, and other structured routines to help a person control his or her behavior. Therapists may also teach children social skills, such as how to wait their turn, share toys, ask for help, or respond to teasing. Learning to read facial expressions and the tone of voice in others, and how to respond appropriately can also be part of social skills training.

Cognitive behavioral therapy can also teach a person mindfulness techniques, or meditation. A person learns how to be aware and accepting of one’s own thoughts and feelings to improve focus and concentration. The therapist also encourages the person with ADHD to adjust to the life changes that come with treatment, such as thinking before acting, or resisting the urge to take unnecessary risks.

**Family and marital therapy** can help family members and spouses find better ways to handle disruptive behaviors, to encourage behavior changes, and improve interactions with the patient.

For more information on psychotherapy, see the [Psychotherapies webpage](https://www.nimh.nih.gov/health/topics/psychotherapies/index.shtml) on the NIMH website.

Education and Training

Children and adults with ADHD need guidance and understanding from their parents, families, and teachers to reach their full potential and to succeed. For school-age children, frustration, blame, and anger may have built up within a family before a child is diagnosed. Parents and children may need special help to overcome negative feelings. Mental health professionals can educate parents about ADHD and how it affects a family. They also will help the child and his or her parents develop new skills, attitudes, and ways of relating to each other.

**Parenting skills training (behavioral parent management training)** teaches parents the skills they need to encourage and reward positive behaviors in their children. It helps parents learn how to use a system of rewards and consequences to change a child’s behavior. Parents are taught to give immediate and positive feedback for behaviors they want to encourage, and ignore or redirect behaviors that they want to discourage. They may also learn to structure situations in ways that support desired behavior.

**Stress management techniques** can benefit parents of children with ADHD by increasing their ability to deal with frustration so that they can respond calmly to their child’s behavior.

**Support groups** can help parents and families connect with others who have similar problems and concerns. Groups often meet regularly to share frustrations and successes, to exchange information about recommended specialists and strategies, and to talk with experts.

Tips to Help Kids and Adults with ADHD Stay Organized

**For Kids:**

Parents and teachers can help kids with ADHD stay organized and follow directions with tools such as:

* Keeping a routine and a schedule. Keep the same routine every day, from wake-up time to bedtime. Include times for homework, outdoor play, and indoor activities. Keep the schedule on the refrigerator or on a bulletin board in the kitchen. Write changes on the schedule as far in advance as possible.
* Organizing everyday items. Have a place for everything, and keep everything in its place. This includes clothing, backpacks, and toys.
* Using homework and notebook organizers. Use organizers for school material and supplies. Stress to your child the importance of writing down assignments and bringing home the necessary books.
* Being clear and consistent. Children with ADHD need consistent rules they can understand and follow.
* Giving praise or rewards when rules are followed. Children with ADHD often receive and expect criticism. Look for good behavior, and praise it.

**For Adults:**

A professional counselor or therapist can help an adult with ADHD learn how to organize his or her life with tools such as:

* Keeping routines
* Making lists for different tasks and activities
* Using a calendar for scheduling events
* Using reminder notes
* Assigning a special place for keys, bills, and paperwork
* Breaking down large tasks into more manageable, smaller steps so that completing each part of the task provides a sense of accomplishment.

**Cerebral Palsy**

[Cerebral palsy](http://www.webmd.com/brain/understanding-cerebral-palsy-basic-information) (CP) is a broad term used to describe a group of chronic "palsies" -- disorders that impair control of movement due to damage to the developing [brain](http://www.webmd.com/brain/picture-of-the-brain). CP usually develops by age 2 or 3 and is a nonprogressive [brain](http://www.webmd.com/brain/rm-quiz-amazing-brain) disorder, meaning the [brain damage](http://www.webmd.com/brain/brain-damage-symptoms-causes-treatments) does not continue to worsen throughout life. However, the symptoms due to the [brain damage](http://www.webmd.com/brain/ss/slideshow-concussions-brain-injuries) often change over time -- sometimes getting better and sometimes getting worse. CP is one of the most common causes of chronic childhood disability.

About 10,000 infants are diagnosed with CP and up to 1,500 [preschoolers](http://www.webmd.com/parenting/guide/parenting-preschoolers-mistakes) in the U.S. are recognized as having it each year. The United Cerebral Palsy Association estimates that more than 764,000 Americans have CP.

Between 35% and 50% of all children with CP will have an accompanying [seizure](http://www.webmd.com/epilepsy/understanding-seizures-basics) disorder and some level of [mental retardation](http://www.webmd.com/parenting/baby/intellectual-disability-mental-retardation). They also may have [learning disabilities](http://www.webmd.com/children/guide/detecting-learning-disabilities) and [vision](http://www.webmd.com/eye-health/default.htm), speech, hearing, or language problems.

Much remains unknown about the disorder's causes, but evidence supports theories that infections, birth injuries, and poor oxygen supply to the [brain](http://www.webmd.com/brain/video/brain-training) before, during, and immediately after birth result are common factors. Premature infants are particularly vulnerable. Severe illness (such as [meningitis](http://www.webmd.com/children/understanding-meningitis-basics)) during the first years of life, physical trauma, and severe [dehydration](http://www.webmd.com/a-to-z-guides/dehydration-adults) can cause brain injury and result in CP.

**Causes Cerebral Palsy**

Congenital cerebral palsy results from brain injury during a baby's development in the womb. It is present at birth, although it may not be detected for months. It is responsible for CP in about 70% of the children who have it. An additional 20% are diagnosed with congenital cerebral palsy due to a brain injury during the birthing process. In most cases, the cause of congenital cerebral palsy is unknown. Some possible causes are:

* Infections during [pregnancy](http://www.webmd.com/baby/default.htm) that may damage a fetus' developing [nervous system](http://www.webmd.com/brain/default.htm). These include rubella ([German measles](http://www.webmd.com/children/tc/rubella-german-measles-topic-overview)), cytomegalovirus (a [herpes](http://www.webmd.com/genital-herpes/default.htm)-type virus), and toxoplasmosis (an infection caused by a [parasite](http://www.webmd.com/skin-problems-and-treatments/ss/slideshow-pictures-of-parasites) that can be carried in cat feces or inadequately cooked meat). Other infections in pregnant women that may go undetected are being recognized now as an important cause of developmental brain damage in the fetus.
* Severe [jaundice](http://www.webmd.com/children/digestive-diseases-jaundice) in the [infant](http://www.webmd.com/parenting/baby/rm-quiz-newborn-typical). Jaundice is caused by excessive [bilirubin](http://www.webmd.com/digestive-disorders/bilirubin-15434) in the [blood](http://www.webmd.com/a-to-z-guides/rm-quiz-blood-basics). Normally, bilirubin is filtered out by the [liver](http://www.webmd.com/digestive-disorders/picture-of-the-liver). But often, newborns' livers need a few days to start doing this effectively, so it's not uncommon for infants to have jaundice for a few days after birth. In most cases, phototherapy (light therapy) clears up jaundice, and there are no lasting health effects. However, in rare cases, severe, untreated jaundice can damage brain cells.
* Rh incompatibility between mother and [infant](http://www.webmd.com/parenting/baby/video/why-babies-cry). In this blood condition, the mother's body produces antibodies that destroy the fetus's [blood cells](http://www.webmd.com/heart/anatomy-picture-of-blood). This, in turn, leads to a form of jaundice in the [newborn](http://www.webmd.com/parenting/baby/default.htm) and may cause brain damage.
* The physical and metabolic trauma of being born. This can precipitate brain damage in a fetus whose health has been threatened during development.
* Severe oxygen deprivation to the brain or significant trauma to the head during [labor and delivery](http://www.webmd.com/baby/guide/normal-labor-and-delivery-process).

**Cerebral palsy is caused by damage to the developing brain before, during or after birth. There are multiple types of brain damage that can lead to different types of cerebral palsy.**

**What Causes Cerebral Palsy?**

Cerebral palsy is caused by traumatic injury to a developing brain, including the parts of the brain responsible for motor control, coordination and balance. Damage to different parts of the brain’s motor control centers causes different [types of cerebral palsy](http://www.cerebralpalsyguide.com/cerebral-palsy/types/). The level of disability depends on the severity and timing of the brain injury.

* About 70 percent of cerebral palsy cases are caused by prenatal injuries
* About 20 percent are caused by [injuries during birth](https://www.cerebralpalsyguide.com/cerebral-palsy/birth-injury/birth-injury-symptoms/)
* About 10 percent are caused by injuries after birth

**What Causes Brain Damage?**

There are several incidents that can damage the developing brain. For example, an infection may inhibit the neurological development of neurons and synapses in the brain or trauma may occur during or after birth.

Things that can disrupt or hinder the healthy development of a child’s brain include:

* **Infections during pregnancy** – Mothers can pass infections to the fetus during pregnancy. Prenatal infections are most dangerous in the first few weeks after conception. German measles (rubella) and cytomegalovirus (CMV) during pregnancy are known causes of cerebral palsy. These viruses cause the mother’s immune system to release proteins that not only attack the infection, but also cause inflammation in the baby’s brain that interferes with normal development. Mothers who eat raw or undercooked meat can increase the likelihood of getting an infection.
* **Severe untreated jaundice** – When a newborn has a yellow color to their skin and/or eyes, it is known as jaundice. Jaundice is caused by excess bilirubin, a chemical pigment that is normally filtered out by the liver. It is normal for newborns to experience mild jaundice before their livers fully develop. However, severe jaundice left untreated can turn into a condition known as kernicterus. Kernicterus is characterized by buildup of an unsafe level of bilirubin, which is toxic to the brain
* **Asphyxiation** – Asphyxiation is a lack of oxygen reaching the brain. It can cause severe brain damage to a baby during birth. Asphyxiation that occurs during labor or delivery may have been caused by [medical malpractice or neglect](https://www.cerebralpalsyguide.com/legal-resources/medical-malpractice/). Early detachment of the placenta, a ruptured uterus during birth or the umbilical cord getting pinched in a way that restricts blood flow can cause oxygen deprivation. Choking on an object or a near-drowning experience can also cause asphyxiation that leads to cerebral palsy.
* **Brain injury during or shortly after birth** – Blunt trauma to the infant or toddler brain can cause cerebral palsy.  Head injuries may occur during labor or delivery or within the first several years of life.
* **Brain hemorrhage before birth** – A brain hemorrhage is abnormal bleeding of the brain caused by a ruptured blood vessel, which can cause serious damage to the motor control centers in the brain.
* **Infections after birth** – Infections (such as meningitis) contracted by newborns can cause brain damage. Meningitis causes severe inflammation that can damage the motor control centers of the brain.
* [**Genetic causes**](https://www.cerebralpalsyguide.com/cerebral-palsy/causes/genetics/) – There has been some speculation and research to suggest that a minute proportion of cerebral palsy cases are hereditary. This is still being studied, and the number of genetic cases of CP, if they exist, is likely negligible.

**Causes by Location of Brain Damage**

The areas of the brain that control motor skills and movement are the motor cortex, pyramidal tract, cerebellum and the basal ganglia. All of these components relay the impulses from the brain to the nerves and muscles that control movement. Damage to any of these parts of the brain may cause cerebral palsy.

* [Spastic](http://www.cerebralpalsyguide.com/cerebral-palsy/types/spastic/) – Spastic cerebral palsy is caused by damage to the motor cortex. This causes exaggerated, jerky movements.
* [Athetoid/dyskinetic](http://www.cerebralpalsyguide.com/cerebral-palsy/types/athetoid/) – Athetoid CP is caused by damage to the cerebellum and/or the basal ganglia. Damage to the cerebellum causes balance issues, while damage to the basal ganglia causes involuntary movements. Athetoid cerebral palsy involves damage to the basal ganglia, but some cases also involve damage to the cerebellum.
* [Ataxic](http://www.cerebralpalsyguide.com/cerebral-palsy/types/ataxic/) – Damage strictly to the cerebellum causes ataxic cerebral palsy. This damage is responsible for issues with coordination and fine motor skills. Children with ataxic CP appear unbalanced.
* [Mixed](http://www.cerebralpalsyguide.com/cerebral-palsy/types/mixed/) – Those with a mixed condition have traits of several types of cerebral palsy caused by injuries to multiple motor control centers in the brain.

**Injuries at Birth**

**Approximately 10 percent of cerebral palsy cases are caused by injuries at birth. The most common cause of these injuries is asphyxiation, and most often in delivery rooms.**

Although obstetric care is the best it’s ever been, a small percentage of [birth injuries](http://www.cerebralpalsyguide.com/cerebral-palsy/causes/birth-injury/)could have been prevented. These injuries are caused by severe medical neglect.

Scenarios that can lead to injuries at birth include failures to:

* Detect irregularities in the umbilical cord
* Identify a decrease in the baby’s heart rate
* Treat severe jaundice

These scenarios aren’t typical and result from careless medical procedures in the delivery room. Regardless of the cause of a child’s cerebral palsy, there are many [treatment options](https://www.cerebralpalsyguide.com/treatment/) available to help them live as normal a life as possible.

If you suspect that your child’s cerebral palsy was a result of a preventable birth injury, you may be entitled to monetary compensation. Get in touch with our experienced lawyers and [start your free case evaluation today.](https://www.cerebralpalsyguide.com/free-case-evaluation/)

**Cerebral Palsy Symptoms in Infants**

Brain injuries that [cause cerebral palsy](http://www.cerebralpalsyguide.com/cerebral-palsy/causes/) affect a person’s capability of movement, posture and balance. The lack of control over motor function causes varied complications for each person with cerebral palsy.

Due to the many different levels of severity and types of movement problems, there are a variety of different signs of cerebral palsy. Symptoms can also vary based on differing levels of severity. Indications of CP are based on the [type of cerebral palsy](http://www.cerebralpalsyguide.com/cerebral-palsy/types/), neurological factors and secondary factors.

**Signs To Look For**

Specific movement problems are the primary indications of cerebral palsy. Cerebral palsy is a group of different motor function disorders caused by injury in different parts of the brain. These motor control problems are the foundation of the multitude of other factors associated with cerebral palsy.

**Spastic**

* Difficulties with fine motor skills due to jerky reflexes
* Stiff muscles (hypertonia)
* Exaggerated reflexes

**Athetoid/dyskinetic**

* Tremors and shakiness
* Involuntary reflexes
* Variations in muscle tone (hypertonia and hypotonia)
* Slow, writhing movement

**Ataxic**

* Lack of coordination
* Difficulty with balance
* Trouble with fine motor skills

**These developmental movement disorders can be limited to: one side of the body, the legs, the arms, all four limbs or just one limb.**

People with cerebral palsy experience different complications based on the location of movement problems. These movement problems usually do not get worse over time, but issues such as a shortening of muscles or tendons may develop without proper management.

**Neurological Signs**

While the primary sign of cerebral palsy is a lack of control of motor function, other conditions may present themselves in people with CP. The areas of the brain that control movement are also responsible for regulating other functions. The brain injuries that cause cerebral palsy can therefore cause other neurological complications. In addition to the motor control centers, other parts of the brain may also be injured during, before or after birth.

Not everyone with cerebral palsy experiences the same neurological effects. The signs of CP depends on the location of their brain injury. These effects can make daily life more difficult, but proper care and management can provide a better quality of life.

Common neurological conditions in people with cerebral palsy include:

* Seizures and epilepsy
* Intellectual disorders
* Learning disorders
* Attention deficit hyperactivity disorder (ADHD)
* Buildup of cranial pressure due to fluid imbalance (hydrocephalus)
* Behavioral problems
* Visual/hearing impairments
* Speech and language issues (dysarthria)
* Sensory impairments/pain

It is important to note that it is hard to assess the intellectual capacity of children with cerebral palsy when they are very young, especially if speech is an issue. Tests to measure intelligence in children usually require communication and control of their hands. Movement is also essential to a child’s ability to express him or herself. The Centers for Disease Control estimates that seven percent of children with cerebral palsy also have autism spectrum disorder.

Slightly over 41 percent of children with cerebral palsy have co-occurring epilepsy. The severity and frequency of seizures depends on the part of the brain that was affected.

**Secondary Signs**

The inability to control motor function can lead to many secondary symptoms. Children who struggle with motor skills have a harder time staying healthy. For example, simple tasks like chewing and swallowing food take more effort for many children with cerebral palsy. People with mild cases of cerebral palsy are less likely than those with severe cases to experience a variety of secondary effects.

Co-occurring conditions commonly associated with cerebral palsy include:

* Stunted growth
* Gastroesophageal reflux
* Drooling
* Sleep disorders
* Airway obstruction
* Tooth and gum disease
* Incontinence
* Constipation
* Contractures
* Frequent fractures
* Hernias
* Trouble sucking or eating

These disorders are generally a result of the brain injury experienced by the child and not a result of a [cerebral palsy diagnosis](http://www.cerebralpalsyguide.com/cerebral-palsy/diagnosis/). Oftentimes, secondary conditions may be interrelated. For example, inadequate growth is common because of poor nutrition, which is often a result of feeding issues.

**Treating The Signs of CP**

It’s easy to grasp why children with cerebral palsy require so much care and medical attention after learning the physical and neurological conditions they can struggle with. [Treatment](http://www.cerebralpalsyguide.com/treatment/) generally encompasses managing these symptoms in a way that allows those with cerebral palsy to live as normal a life as possible. Being patient and staying proactive is the best way to manage the variety of signs anyone with cerebral palsy may encounter.

To learn more about detecting cerebral palsy, [try downloading our free Cerebral Palsy Guide](https://www.cerebralpalsyguide.com/free-guide/), which includes over 60 pages of in-depth information for children and parents of a child with CP.

**Diagnosis – Identifying Cerebral Palsy in Children**

The [symptoms](http://www.cerebralpalsyguide.com/cerebral-palsy/symptoms/) and [signs of cerebral palsy](http://www.cerebralpalsyguide.com/cerebral-palsy/symptoms/signs/) start appearing at different ages for each child. Some [risk factors](http://www.cerebralpalsyguide.com/cerebral-palsy/causes/risk-factors/), such as a premature birth, may point to cerebral palsy in the future. However, it’s not until parents notice their child failing to reach developmental milestones that they might suspect CP.

It is important to make a complete diagnosis of the specific type of cerebral palsy that your child has, to get the right kind of treatment. This includes diagnosing the [spectrum of conditions](https://www.cerebralpalsyguide.com/cerebral-palsy/coexisting-conditions/) (behavioral disorders, speech impairment, etc.) that may accompany it.

**Observational Diagnosis**

Parents usually first notice a problem when their child isn’t meeting developmental milestones, like rolling over or sitting up. If physicians suspect cerebral palsy, they will observe the child’s development through routine appointments until they can make an accurate diagnosis.

Diagnosing cerebral palsy isn’t a straightforward process. It requires careful monitoring in the first months of development. Children are generally screened intermittently for developmental disabilities at 9, 18 and 24 months.

Pediatricians watch for delays in key areas of motor function, such as:

* Holding his/her head up
* Rolling over
* Visual alertness
* Sitting
* Crawling
* Walking
* Picking up small objects

Doctors assess development by evaluating the child’s posture, reflexes and muscle tone.

**Comparing the child’s motor skills to normal developmental milestones helps doctors make a diagnosis.**

**How Soon Can a Diagnosis Be Made?**

The signs of a mild case of cerebral palsy often go unnoticed until the child reaches 3 to 5 years of age. Moderate to severe cases are usually diagnosed by the age of two. The [type of cerebral palsy](http://www.cerebralpalsyguide.com/cerebral-palsy/types/) a child has may also affect how soon a diagnosis can be made.

**Imaging Tests**

Imaging tests may be used if a doctor thinks a child has cerebral palsy. There are a few imaging technologies that can uncover the extent of a child’s condition. Imaging tests are useful to help assess other conditions that occur alongside cerebral palsy, such as seizures, and determine their cause. In some cases, imaging tests have led to a conclusive diagnosis of cerebral palsy.

Imaging tests used on children who may have cerebral palsy include:

**Magnetic resonance imaging (MRI)**

An MRI produces a three-dimensional image of the brain and can reveal abnormalities that are contributing to motor function problems. The process can take up to an hour and MRIs are generally regarded as a safe and painless procedure when used in children.

The MRI scanner is a large, oval-shaped magnet that is hollow in the center. Patients will be placed on a table that slides into the tunnel, where the tests are completed. Doctors will be able to view 3-D, black and white images of the brain or body.

MRI testing is used to check for any neurological irregularity in children who may be exhibiting symptoms of CP. MRI tests can also be used to determine the cause of the cerebral palsy.

**Computed tomography (CT)**

CT scans take cross-sectional images of a child’s brain. The scan takes roughly 20 minutes and it is mostly used to detect and diagnose cerebral palsy. CT scans can help to eliminate any other conditions or diseases that have symptoms similar to CP. This scan can be used to detect things such as bleeding in the brain, skull fractures or other related brain conditions.

CT scans can also help determine the cause and time of a brain injury that led to the development of cerebral palsy. The results of a CT scan appear similar to an x-ray and feature pictures of all different angles to allow for a clear examination of various organs and tissues.

**Cranial ultrasound**

This imaging test isn’t as detailed as an MRI or CT scan, but it is often used because it is quick and easy for the patient. Cranial ultrasounds may provide evidence of an infant’s likelihood of having cerebral palsy by allowing doctors to see an image of the brain tissue.

Cranial ultrasounds are also useful in determining if a child has cerebral palsy after they are born. While early signs of cerebral palsy may be present before or at birth, in mild cases of CP, it may take up to 5 years of age to render a complete diagnosis. Doctors use cranial ultrasounds to capture subtle changes in white matter, which is the type of brain tissue that is damaged in cerebral palsy.

**Electroencephalogram (EEG)**

An EEG measures the electrical activity of the brain. Children with seizures have distinct electrical patterns in their brain. Doctors use an EEG to diagnose epilepsy by recording those patterns.

During an EEG, patients will have a series of electrodes attached to their scalp so that the electrical energy can be measured. Due to the correlation between cerebral palsy and epilepsy, if a doctor determines that a child has epilepsy using this testing, this may increase the chances of a diagnosis of cerebral palsy.

**Other Tests for Children with CP**

Doctors should always perform a complete assessment of their patients. On top of standard imaging tests, doctors may conduct other evaluations for conditions that often accompany cerebral palsy, such as intellectual disabilities. It’s important to have the whole picture so the child can get effective [treatment](http://www.cerebralpalsyguide.com/treatment/) and care.

Some of these tests include:

* Hearing tests
* Vision tests
* Speech tests
* Intellectual tests

Doctors may also require blood tests to rule out hereditary conditions that affect motor function in children who might have cerebral palsy.

**Diagnosis by Level of Severity**

Cerebral palsy is also classified by severity. The levels of severity are roughly defined as mild, moderate or severe. Classifying the [type of cerebral palsy](https://www.cerebralpalsyguide.com/cerebral-palsy/types/) paints a near complete picture of how a person is affected by their disability.

The Gross Motor Function Classification System (GMFCS) is often used to diagnose the severity of a child’s motor impairment. Doctors can also use the GMFCS to make a [prognosis](https://www.cerebralpalsyguide.com/cerebral-palsy/prognosis/) and determine the likelihood of a child improving their gross motor skills (sitting without support, walking, etc.).

The GMFCS has five levels of motor impairment from least severe (Level I) to most severe (Level V). The level of severity a child is initially diagnosed with, can be a prognostic indicator of their future motor skills.

**GMFCS – The 5 Levels of Severity in Cerebral Palsy**

* **Level I** – Fully independent, can perform most physical activities normally with only slight problems in balance or coordination.
* **Level II** – Trouble balancing on uneven surfaces, requires use of railings when climbing stairs, but can walk independently for the most part; minimal ability in  running and jumping.
* **Level III** – Requires devices such as crutches or a wheelchair; may be able to climb stairs using railing.
* **Level IV** – Ability to walk is severely affected, most likely using wheelchair to get around.
* **Level V** – Significant restrictions in voluntary control; cannot walk, sit or stand independently.

The need to reclassify the level of severity grows as the child gets older as motor ability changes over time.

The chart below is based on a study published in The Journal of the American Medical Association. It shows the approximate age when motor development begins tapering off. It is based on a child’s initial level of motor function impairment, as defined by the GMFCS. For example, a child diagnosed with Level II motor impairment has the most potential to develop motor skills up to the age of 4 1/2 years old.

**Potential To Improve Motor Skills**

A child’s level of impairment based on the GMFCS may change as they get older. As the child develops, their motor impairment can improve, so they may be reclassified at a less severe level of impairment.

Children reach most of their motor development potential early in life. For children with cerebral palsy, the severity of their condition limits this potential. For example, a child with Level IV movement problems may learn to sit unsupported by 3 years old, but their motor development is likely to taper off at this age. A child with Level II movement problems, however, may sit by 18 months old and eventually start walking before their motor function potential is reached.

**Difficulties in Diagnosing Cerebral Palsy**

Developmental disorders like cerebral palsy are hard to diagnose. Younger children have a higher capacity to heal, and there are many children who fully recover from developmental problems caused by brain injury.

Additionally, early diagnoses of cerebral palsy are difficult to make because it’s hard to differentiate between the signs of CP and the normal reflexes of a developing child. It’s also harder to detect CP in children whose condition is mild because very young children and those with CP both lack motor control and coordination. Therefore, observing the development of the child’s motor skills is the first step toward making a diagnosis.

Common reasons why cerebral palsy is hard to diagnose include:

* It may take years for clear signs to appear
* Many children with brain damage make a recovery
* Levels of severity vary greatly
* Signs of CP resemble other disorders

Paying close attention to a child’s delays in motor control is important to rule out any other disorders that look like cerebral palsy in the first months of life. For example, transient dystonia (irregular flexing of the torso) often occurs in prematurely born babies. Infants with transient dystonia have movement issues very similar to infants with CP, but transient dystonia can be corrected after one year of age.

Doctors are usually hesitant to make a diagnosis of cerebral palsy because it shares many symptoms with other conditions. Doctors try to avoid putting more stress on the parent until they are absolutely sure the problem is cerebral palsy.

**What To Do if You Think Your Child Has Cerebral Palsy**

If your child seems like they are falling considerably behind developmental milestones, it is up to you to find a specialist who can investigate the cause.

If you are concerned your child may have cerebral palsy, some early steps you can take to get a faster diagnosis are:

* Learning the signs and symptoms of cerebral palsy
* Observing and taking note of your child’s development
* Seeing a pediatrician for routine checkups

**There are 4 main types of cerebral palsy. These are classified based on mobility limitations and the body part(s) being affected.**

**Categorizing Cerebral Palsy**

[Cerebral palsy](https://www.cerebralpalsyguide.com/cerebral-palsy/) is broken down into different types to help describe how one’s brain damage has impacted their overall mobility. Each type of cerebral palsy is categorized using two factors: the type of [movement issues](https://www.cerebralpalsyguide.com/cerebral-palsy/symptoms/mobility/) and the body part(s) being affected.

**There are four major types of cerebral palsy: spastic, athetoid, ataxic and mixed type.**

The type of movement issues seen in a person with CP depends on how severely a brain injury has impacted muscle tone. Muscle tone is defined as the strength and tension of the muscles.

There are two common terms used to describe how cerebral palsy affects muscle tone — hypotonia and hypertonia. These are useful to better understand the types of CP.

* **Hypotonia** – Low muscle tone, causing a loss of strength and firmness
* **Hypertonia** –  High muscle tone, causing rigidity and spasmodic movement

**Different Types of Cerebral Palsy**

* Spastic
* Athetoid
* Ataxic
* Mixed

**Spastic Cerebral Palsy**

[Spastic cerebral palsy](http://www.cerebralpalsyguide.com/cerebral-palsy/types/spastic/) is the most common type of CP, making up 70 to 80 percent of cases. People with spastic cerebral palsy often experience exaggerated or jerky movements (hypertonia).

Spastic CP is caused by damage to the brain’s motor cortex, which controls voluntary movement. It is also caused by damage to the pyramidal tracts, which help relay signals to the muscles. This is why spastic CP is sometimes referred to as “pyramidal”.

The motor cortex is found on both sides of the brain and the pyramidal tracts connect each side of the motor cortex. Damage to the right side of the motor cortex causes movement problems on the left side of the body, and vice versa.

Common signs and symptoms of spastic cerebral palsy include:

* Awkward reflexes
* Stiffness in one part of the body
* Contractures (permanently tightened muscles or joints)
* Abnormal gait

**Athetoid Cerebral Palsy**

About 10 percent of children with cerebral palsy are diagnosed with athetoid CP, or “non-spastic CP”. This type of CP is characterized by a mixture of hypotonia and hypertonia, which causes muscle tone to fluctuate. The main trait of [athetoid cerebral palsy](http://www.cerebralpalsyguide.com/cerebral-palsy/types/athetoid/) is involuntary movement in the face, torso and limbs.

This type of cerebral palsy is caused by damage to the brain’s basal ganglia and/or cerebellum. The basal ganglia is responsible for regulating voluntary motor function and eye movements, while the cerebellum controls balance and coordination.

Athetoid CP is referred to as “extrapyramidal” because the extrapyramidal tracts in the brain help regulate involuntary reflexes and movement signaled by the basal ganglia and cerebellum.

Common symptoms associated with athetoid cerebral palsy include:

* Stiff or rigid body
* Floppiness in the limbs
* Problems with posture
* Issues feeding

**Ataxic Cerebral Palsy**

Ataxia is a type of CP that causes problems with balance and coordination. [Ataxic cerebral palsy](http://www.cerebralpalsyguide.com/cerebral-palsy/types/ataxic/) makes up a small percentage of all cases. Those with ataxic CP typically have issues surrounding voluntary movement.

Ataxic cerebral palsy is different than other types of CP because it is primarily caused by damage to the cerebellum, which controls balance and coordination. People with ataxic CP often experience tremors and a reduction in muscle tone.

Common symptoms of ataxic cerebral palsy include:

* Difficulty speaking
* Problems with depth perception
* Shakiness and tremors
* Spreading feet apart when walking

**Mixed Cerebral Palsy**

Sometimes damage to the developing brain isn’t confined to one location. In these circumstances, it is possible for a child to develop cerebral palsy that is characteristic of multiple brain injuries.

When a child is showcasing symptoms of more than one type of CP, it is considered to be [mixed cerebral palsy](https://www.cerebralpalsyguide.com/cerebral-palsy/types/mixed/). This diagnosis makes up less than 10% of all CP cases.

The most common mixed cerebral palsy diagnosis is a combination of spastic and athetoid CP. [Parents and caregivers](https://www.cerebralpalsyguide.com/community/parents-caregivers/) should seek out [CP specialists](https://www.cerebralpalsyguide.com/cerebral-palsy/diagnosis/cerebral-palsy-doctors-and-specialists/) if they suspect more than one type of cerebral palsy is present.

**Location of Movement Problems**

The type of cerebral palsy explained by the location of movement problems is more straightforward than the classification by brain injury. The location of movement problems, however, is related to the location of the brain injury.

Damage to the right side of the motor cortex causes issues with motor functions on the left side of the body — an issue that defines the location of movement issues. Yet, there is a range of different areas where normal motor skills may be affected.

**Monoplegia**

Only one limb’s movement is affected. It usually occurs in the arm or leg. This type of movement problem is very rare.

**Diplegia**

Two limbs, usually the legs, are affected. Oftentimes, those with diplegia have mild movement problems in the upper body as well. In those with cerebral palsy, diplegia is commonly the result of premature birth.

**Hemiplegia**

One side of the body is affected. The arm is usually more impacted than other limbs, distinguished by a rigidly flexed wrist or elbow. Some people with hemiplegia may not be able to use the affected hand. Prenatal bleeding in the brain can cause hemiplegia.

**Triplegia**

Three limbs are affected.

**Quadriplegia**

All four limbs are involved, but the legs are affected worse than the arms. There may be limited control over facial muscles as well.

**Double hemiplegia**

Like quadriplegia, all four limbs are affected, but the arms are more affected than the legs.

**Determining The Type of CP**

When a child is [diagnosed with cerebral palsy](https://www.cerebralpalsyguide.com/cerebral-palsy/diagnosis/), their diagnosis encompasses the brain injury and movement problem. For example, a diagnosis of cerebral palsy may be “spastic diplegia” or “athetoid quadriplegia”.

To learn more about the various types of cerebral palsy and how to get an accurate diagnosis, [download our free Cerebral Palsy Guide.](https://www.cerebralpalsyguide.com/free-guide/) You will find over 60 pages of in-depth information for children and parents of a child with CP.

**Treatment for cerebral palsy is multifaceted, often requiring multiple doctors and therapies. Early treatment usually has the greatest chance of improving a child’s condition.**

**Understanding Cerebral Palsy Treatment**

The purpose of treatment for cerebral palsy is to promote the most normal, manageable and healthy life possible.

This is accomplished through treatments that allow people with cerebral palsy to maximize their independence in daily life.

**Because every diagnosis is different, treatments vary greatly based on the individual.**

The type of treatments used depends on the patient’s:

* [Type of cerebral palsy](http://www.cerebralpalsyguide.com/cerebral-palsy/types/)
* Location of movement problems
* Level of disability
* [Co-occurring conditions](https://www.cerebralpalsyguide.com/cerebral-palsy/coexisting-conditions/)

No two people receive the same treatment for cerebral palsy. Treatment encompasses short-term and management approaches to all the specific conditions that a child may face. This could involve medications, physical therapy, surgery and more.

**Considerations Before Starting Treatment**

The needs of a child with cerebral palsy aren’t solely based on correcting their physical disabilities. There are also social and emotional aspects of living a more fulfilling life. These aspects shouldn’t be ignored when considering treatment and therapy.

Many children are content with their disabilities. As a parent, it’s important to consider their feelings. Some treatments can be stressful and uncomfortable, and may not be in the best interest of the child. It’s important to discuss the physical and emotional impacts of all treatments with specialists and most importantly, the child.

**Knowing the Specialists**

Managing all aspects of a child’s unique [diagnosis](https://www.cerebralpalsyguide.com/cerebral-palsy/diagnosis/) is essential for successful comprehensive treatment. Well-rounded treatment approaches require a team of multidisciplinary specialists, usually with a pediatrician at the center of the group.

Pediatricians are generalists who manage the treatment plan, recognize specific issues and recommend specialists who can treat those issues. Each specialist uses ongoing treatment and assessments to ensure that all areas of the child’s development are proceeding as normally as possible.

Types of specialists a child with cerebral palsy may require include:

* Developmental pediatrician
* Neurologist
* Physical therapist
* Occupational therapist
* Surgeon
* Behavioral therapist
* Speech and language therapist
* Ophthalmologist (eye specialist)
* Otolaryngologists (ear, nose and throat specialist)

**Physical Therapy**

[Physical therapy](http://www.cerebralpalsyguide.com/treatment/physical-therapy/) is typically the first, and most important, step toward treating cerebral palsy. It usually begins at a young age and is geared toward improving independent motor function. The types of physical therapies used for children depend on their specific movement problems and symptoms that coincide with cerebral palsy.

Physical therapy can improve:

* Strength
* Mobility
* Posture
* Balance
* Flexibility

Before physical therapy begins, the therapist takes an assessment of the child’s motor capabilities. This helps determine the most appropriate measures for therapy. After evaluating the child, the therapist will prescribe strength training exercises, stretches and muscle relaxing techniques based on the child’s needs.

Exercise equipment includes weights, resistance bands, balance balls and machines to improve muscle tone. Hot and cold packs are often used to help relax and heal muscles.

Scoliosis (spinal curvature) and shortened achilles tendons are some specific movement and posture issues that are treated with physical therapy. Physical therapy is an important prevention measure, as these issues can get worse over time. Proper treatment of the above conditions can also improve the chance of a child walking independently.

Many specialists recommend starting physical therapy as early as possible to prevent future complications like contractures—a shortening of muscles and tendons that can be painful and is common in spastic cerebral palsy. Strength training exercises are also helpful for children with dyskinetic cerebral palsy who have loose muscles and may experience atrophy.

**Orthotics**

Orthotics are devices used to train major muscle groups and are often a part of physical therapy. Splints, braces and casts may be used to assist children with high or low muscle tone. For example, children with scoliosis are often fitted with a plastic brace to correct curvature of the spine as they grow. These devices encourage mobility, balance and proper growth.

**Occupational Therapy**

[Occupational therapy](http://www.cerebralpalsyguide.com/treatment/occupational-therapy/) helps children with cerebral palsy improve fine motor skills. In general, physical therapy is used to improve gross motor function, but it doesn’t focus on fine motor function. People with cerebral palsy struggle with coordinating these skills for tasks such as grasping a spoon and bringing it to their mouth. But occupational therapists often work with physical and speech therapists to build a complete therapy plan.

Occupational therapists evaluate a child’s needs by testing his or her fine motor skills, perception and oral motor skills. By observing how the child responds to touch and movements, the therapist can determine a treatment plan. The treatment plan typically involves positioning, reaching, grasping and releasing.

Occupational therapy can help with activities such as:

* Writing
* Picking up small objects
* Fastening zippers
* Opening jars
* Using scissors

These skills are important for a child to develop the ability to be independent. Occupational therapy for children usually involves a form of play to keep them motivated.

Many children with cerebral palsy have sensory impairments that make movement difficult. Our senses help us recognize changes in temperature, feel pain and to be aware of the space around us. Senses, such as touch and balance, are important for motor skills like picking up objects and walking.

Other senses, such as proprioception, allow people to know the location of their own body parts; being able to touch your finger to the tip of your nose is an example of the proprioceptive sense. Sensory impairments make it hard to develop movement skills, and occupational therapists help children work through these impairments.

**Speech Therapy**

Birth injuries can also affect the parts of the brain that control speech and the muscles that allow us to speak. Many children with CP have issues with speech due to their birth injury. [Speech therapy](http://www.cerebralpalsyguide.com/treatment/speech-therapy/) can teach children how to pronounce certain words and communicate more effectively.

Speech therapists can diagnose speech issues and help improve language skills. They can also help with other skills, such as breathing and eating, because these issues involve the muscles in the mouth and face.

Speech therapy also tackles problems that affect a child’s ability to eat. Many children with CP struggle to maintain a healthy weight because it’s hard to chew or swallow food. Oral motor exercises can improve the ability to chew and swallow food effectively.

Speech therapists also work with other therapists. For example, a speech therapist and an occupational therapist can help children with drooling problems due to low muscle tone in the face and mouth.

**Medications**

People with cerebral palsy are often prescribed various [medications](http://www.cerebralpalsyguide.com/treatment/medications/) to help manage their condition. Medications can help manage both movement issues and secondary conditions that develop due to cerebral palsy.  The types of medications to treat these conditions range from antidepressants for seizures to nerve blocks for spasticity. To prevent unnecessary side effects, doctors weigh the pros and cons of these medications before prescribing them.

Common conditions treated with medication include:

* Seizures
* Involuntary movement
* Spasticity
* Incontinence
* Gastroesophageal (acid) reflux

**Surgery**

There are multiple [surgical treatments](http://www.cerebralpalsyguide.com/treatment/surgery/) that can help correct movement problems in children with cerebral palsy. However, parents should keep in mind that surgery isn’t right for every child with cerebral palsy.

Surgery is most commonly prescribed for those with [spastic cerebral palsy](https://www.cerebralpalsyguide.com/cerebral-palsy/types/spastic/) because their increased muscle tone can be reduced to relieve restricted movement. For example, a child who walks on their toes due to high muscle tone in their legs can have those muscles or tendons lengthened, allowing for more normal walking.

Surgeries that can improve mobility in children with high muscle tone include:

* **Muscle and tendon lengthening** – A procedure used to correct contracted muscles or tendons, freeing up movement to walk or use hands.
* **Tendon transfer** – Transferring tendons from one bone to another is intended to give better alignment and motor control, especially in the feet and ankles.
* **Tenotomy/myotomy** – Cutting the tendon/muscle can relieve pain and restrictive movement caused by contractures—a permanent tightening of tendons or muscles.
* **Neurectomy** – Cutting the nerve that controls a specific muscle group can reduce spasticity or rigidity in that area. It is generally used to correct hip dislocations.
* **Osteotomy** – A procedure to realign joints by removing part of the bone.
* **Arthrodesis** – Fusing two bones together can produce stability in some cases.
* **Selective dorsal rhizotomy** – This aggressive procedure involves cutting specific nerves in the spinal column to correct spasticity in various muscle groups throughout the body.

Surgery is most effective when the child is old enough that doctors can determine where their movement issues are stemming from but young enough that there is still time to correct movement. This window is usually between 3-8 years of age.

Surgery may also be used to treat other conditions associated with cerebral palsy, such as hearing impairment and difficulties with feeding.

**Treatments for Other Conditions Associated with CP**

Many children with cerebral palsy develop co-occurring conditions as a result of their brain injury or movement problems. Each of these conditions must be treated as vigilantly as the child’s movement issues to ensure they get the best quality of life possible.

**Seizures**

Seizures are a disorder characterized by convulsions and sometimes a loss of consciousness. Approximately 41 percent of children with cerebral palsy have seizures. As with cerebral palsy, seizures come in varying levels of severity. Each case requires a specific approach to management. This requires surgery in some instances, but medication is the most common treatment.

**Intellectual disabilities**

Cerebral palsy itself does not affect intelligence. It is strictly a movement disorder. However, the brain injuries that cause CP can sometimes damage parts of the brain responsible for cognition. Some estimates suggest 25 to 60 percent of children with CP have a form of mental retardation. Estimates vary because some children with CP can’t speak or control their bodies well enough to complete an IQ test. The severity of these intellectual disability also varies. Treatment usually involves a combination of medication and behavioral therapy.

**Hydrocephalus**

This is a rare condition characterized by an unusual buildup of cerebrospinal fluid (CSF) within the skull. CSF has several functions, including nourishing the brain and removing waste from its surface. The buildup of CSF causes a disproportional increase in the size of the head that may be fatal. It is treated by implanting valves that allow excess CSF to drain off. The incidence of hydrocephalus is approximately less than two thousandths of a percent for every birth in the country, according to some estimates.

**Gastrointestinal issues**

The gastrointestinal system is complex and includes the stomach, intestines, esophagus and liver. The gastrointestinal system relies on a variety of muscles to work effectively. Children with problems chewing and swallowing often require therapy to learn how to eat effectively. Acid reflux is also a problem because the lower muscle in the esophagus isn’t strong enough to keep food in the stomach. Untreated acid reflux can be serious for children with CP. It can lead to complications such as pneumonia or esophagitis. Acid reflux can usually be controlled with special eating techniques and medication, but may require surgery in severe circumstances.

**Urinary infections**

Urinary tract infections are very common in children with cerebral palsy. Children with CP often struggle with bladder control and constipation because these movements require the coordination of multiple muscle groups. Many children soil themselves frequently because of a lack of normal muscle control. Parents can help prevent urinary infections by giving frequent baths and diaper changes.

**Vision/hearing impairment**

Brain injuries before, during or after birth may also cause  vision or hearing loss. Damage to the motor cortex can cause problems with sight. Treatment may involve removing cataracts, correcting crossed eyes or simply prescribing glasses. Up to 15 percent of children with cerebral palsy have a hearing impairment. Hearing issues are treated with surgery or hearing aids.

**Dental issues**

Children with athetoid cerebral palsy may experience dental issues. The inability to control muscle movement in the mouth can cause problems such as overbites, underbites, tooth decay and enamel defects.