

| Cerebral Palsy (CP) | |
|--|------|
| Staff Name | Date |
| <i>Read the information about this topic, print the questions at the end of the reading material, and then answer the questions. When you have completed answering the questions, compare your answers with the answers provided at the end of this document. Return your completed questions to the office.</i> | |

Definition
Characteristics
Causes
Types
Health Issues/Complications
Treatment/Support
Long Term Outlook
Coping
Questions
Answers

DEFINITION

Cerebral palsy (CP) is not a disease or an illness. It is not contagious, it is not inherited, and it is not progressive. It is not a "behavior" and it is not something someone "grows out of".

Cerebral palsy is a group of disorders that appears during the first few years of life and affects the individual's ability to coordinate body movement and maintain balance and posture. These disorders are caused by damage to an individual's brain early in the course of development, such as during fetal development, during the birth process, or during the first few months after birth. Cerebral palsy results from an abnormality in or injury to the cerebrum, the area of the brain which controls sensation and voluntary motor function. Although cerebral palsy affects movement, the underlying problem originates in the brain, not in the muscles themselves. People with cerebral palsy have damage to the part of the brain that controls muscle tone. Muscle tone is the amount of resistance to movement in a muscle and it is what lets you move and keep your body in a certain posture or position.

Sitting up straight and keeping your head up requires muscle tone. In order to move, a change in muscle tone is needed. To bring your hand to your face, the tone in the muscle in the front of your arm must increase while the tone in the muscle at the back of your arm must decrease. To move smoothly, different muscle groups must be balanced.

CHARACTERISTICS

Cerebral palsy ranges from mild to severe and the physical signs or symptoms range from mild to severe. The signs differ from person to person and change as a person's nervous system matures. Although CP does not get worse over time, the exact symptoms may change over an individual's lifetime. They may include weakness and floppiness of muscles or spasticity and rigidity. Symptoms of cerebral palsy can be as simple as having difficulty with fine motor tasks like writing or using scissors or as profound as being unable to maintain balance or walk. Individuals with severe CP may have involuntary movements, such as uncontrollable hand motions, spasms, and drooling.

Some persons with severe CP may not be able to walk, may have severe mental retardation, or may require lifelong care while others are quite bright, display only slight awkwardness, and may need little or no special assistance.

In general, individuals 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

CAUSES

Approximately 1 million people in the United States have CP. Improvements in medicine over the past 30 years have enabled more critically premature and frail babies to survive infancy and many of these surviving children suffer developmental disorders and neurological damage. Although early signs of cerebral palsy may be present from birth, it's often difficult to make a definite diagnosis during the first six months. Cerebral palsy is generally diagnosed by age 1 or 2. Cerebral palsy may be present at birth (congenital) or acquired after birth.

Although an individual may not have any apparent problems during development or at birth, some factors may increase the risk of cerebral palsy:

- * babies that are premature or have a low birth weight
- * fetuses in a feet-first position (breech presentation) at the beginning of labor
- * complicated labor and delivery
- * maternal infection during pregnancy
- * health problems in the mother during pregnancy that impair normal blood circulation to the uterus and placenta

Acquired

Approximately 10% to 20% of children with cerebral palsy acquire it after birth, typically from brain damage sustained in the first few months or years of life. In such cases, the disorder may result from:

- * brain infections like *bacterial meningitis* (an infection and inflammation of the membranes and fluid surrounding the brain and spinal cord) or *viral encephalitis*
- * head trauma sustained from an accident, fall, or inflicted injuries (e.g., shaken baby syndrome)

Congenital (present at birth)

The cause of congenital CP may be unknown and may go undetected for months. Certain events during pregnancy, labor, and delivery can damage motor centers in the developing brain and cause cerebral palsy. There are many possible causes of congenital cerebral palsy, including:

- * abnormal brain development before birth, resulting from genetic causes or metabolic disorders
- * infections (German measles (*rubella*), *cytomegalovirus*, *toxoplasmosis*) or other viral infections during pregnancy
- * severe, untreated jaundice which may be caused by infection, severe bruising, or problems with red blood cells
- * deprivation of oxygen to the brain (*asphyxia*), severe, lengthy deprivation of oxygen, or head trauma sustained during labor and/or delivery
- * brain hemorrhage (similar to a stroke in an adult)

TYPES

There are four major types of cerebral palsy, reflecting the type of movement disturbance displayed by the individual:

- * *Spastic CP*. Most common; increased muscle tone; movement is difficult, awkward; stiff, permanently contracted muscles; may affect some or all parts of the body; 5 categories described in terms of what parts of the body are affected:
 - * *Diplegia*– affecting either both arms or both legs; legs often turn in and cross at the knees which causes a scissors gait, in which the hips are flexed, the knees nearly touch, the feet are flexed, and the ankles turn out from the leg, causing toe-walking
 - * *Hemiplegia*– affecting limbs on only one side of the body (arm more than leg); may also experience *hemiparetic* tremors (uncontrollable shaking of the limbs on one side of the body); severely impaired movement; learning disabilities, vision problems, seizures, and dysfunction of the muscles of the mouth and tongue are classic symptoms
 - * *Quadriplegia*– affecting all four limbs, trunk, face; dysfunction of the muscles of the mouth and tongue, seizures, medical complications, and increased risk for cognitive difficulties
 - * *Monoplegia*– affecting one limb (extremely rare)
 - * *Triplegia*– affecting three limbs (extremely rare)
- * *Athetotic* (also called *extrapyramidal* or *dyskinetic*) *CP*. Affects the entire body and often causes uncontrolled, slow, writhing movements of the hands, feet, arms, or legs (*athetosis*); may have abrupt, irregular, jerky movements (*chorea*), a combination (*choreoathetosis*), or slow rhythmic movements with muscle tone abnormalities and abnormal postures (*dystonia*); muscles of the face and tongue may be affected, causing grimacing and/or drooling; may affect the muscles that control speech causing *dysarthria* (abnormal pronunciation of speech); hearing loss is common; muscle tone can change from day to day and can vary even during a single day
- * *Ataxic CP*. Least common; affects balance, coordination, and depth perception; may cause unsteadiness when walking with feet placed far apart; may cause difficulty with quick movements or precise, controlled movements, like writing or buttoning a shirt; may have increased or decreased muscle tone; may cause difficulty with controlling hands or arms when reaching for something (*intention tremor*, where a voluntary movement (for example, reaching for an object) sets off trembling in the limb, becoming more intense as the individual nears the target)
- * *Mixed CP*. Two or more types present; most common pattern is *spastic-athetoid*; least common is *athetoid-ataxic*

HEALTH ISSUES/COMPLICATIONS

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

- * development of joint deformities or dislocation hip dislocation, curvature of the spine (*scoliosis*)
- * upper respiratory problems, such as bronchitis, and asthma
- * skin problems
- * nutrition problems
- * incontinence, constipation
- * dental problems, such as decay
- * disabilities
 - * intellectual impairment/mental retardation - from mild learning disabilities to severe retardation
 - * failure to grow or thrive - disrupted growth process; may be caused by a combination of poor nutrition and damage to the brain centers that control growth; failure to gain weight normally, abnormally short stature, slow sexual development; muscles and limbs that are smaller than normal; limbs on one side may grow slower than those on the other side
 - * sensory deficits (vision, hearing, speech, touch, depth perception) - vision, hearing, speech, sense of touch, and depth perception may be impaired; double vision, poor vision, impaired depth perception or blindness; poor hearing or deafness; impaired sensations of touch or pain; difficulty perceiving or identifying the form and nature of an object placed in their hand using the sense of touch alone
 - * seizures - uncontrolled bursts of electricity disrupt the brain's normal pattern of electrical activity
 - * *tonic-clonic* - seizures that spread throughout the brain, typically causing the patient to cry out, followed by unconsciousness, twitching legs and arms, convulsive body movements, and loss of bladder control
 - * *partial* - seizures confined to one part of the brain and may be simple (muscle twitching, chewing movement, and numbness or tingling) or complex (hallucinations; staggering, random movement; and impaired consciousness or confusion)

TREATMENT/SUPPORT

The type and amount of treatment and support for an individual with CP depend on how many problems an individual has, how severe they are, and whether they change over time. Individualized treatment plans and support are based on the individual's needs and problems. It is essential to involve the individual, the family, caregivers and other professionals in all phases of planning, decision making, and treatment and to address issues of social and emotional development, communication, education, nutrition, and mobility. The goal in treating and supporting an individual with CP is to help the individual reach his maximum potential. Treatment and support may include counseling to cope with emotional and psychological challenges, physical therapy, special education, vocational training, recreation, and leisure programs, personal care assistance, special living accommodations, and transportation and employment assistance services.

* Physical therapy

Special exercise programs for improving movement, strength, balance, motor development, mobility, and to increase functional independence (performing tasks such as dressing, writing, using the bathroom). Approaches may include exercise, mobility training, orthotics or braces, and use of other equipment. Normally, muscles and tendons stretch and grow at the same rate as bones. Spasticity can prevent stretching, and muscle growth may not keep up with bone growth, so the muscles can become fixed in stiff, abnormal positions. Daily range of motion exercises help prevent muscles from growing weak and atrophied or rigidly fixed from contracture.

* Occupational therapy

Special exercises, practice, strategies, and adaptive equipment to help the individual learn life skills for home, school, and work. Approaches may include focusing on the development of fine motor skills and self-care skills to promote independent participation in daily activities and routines.

* Speech and language therapy

Diagnosis and treatment of communication problems, including the receptive (understanding) part and the expressive part (talking) of speech and language may help with difficulties related to word pronunciation (*dysarthria*) swallowing (*dysphagia*), eating, and drooling. Speech and language therapy may also help with communication through the use of special communication devices like computers with voice synthesizers or sign language.

* Vision/Hearing Assistance

Eyeglasses, hearing aids, surgical procedures to help correct problems.

* Psychology/Psychotherapy/Behavioral Therapy

Use of praise, positive reinforcement, and small rewards can encourage an individual to learn to use weak limbs, overcome speech deficits, and address negative or destructive behaviors. Use of techniques to encourage the mastery of tasks to promote muscular and motor development and to guide the individual and his family through the stresses and demands presented by cerebral palsy.

* Mechanical Aids/Assistive Devices

Use of a variety of devices to help overcome physical limitations, including orthotics, "braces" or "splints" to help with function, such as improved walking, additional stretching or optimal positioning of a joint, and controlling limb position, simple Velcro shoe straps, rails, grab bars, magnifiers, walkers, motorized wheelchairs, and computerized communication devices. A light pointer attached to a headband and a voice synthesizer on a computer allows an individual unable to speak or write to communicate using nothing but simple head movements.

* Medication/Orthopaedic Surgery

Medications may be used to ease muscle spasticity and reduce seizures. Orthopaedic surgery may help to predict, diagnose, and treat associated muscle, tendon, and bone problems. Individuals with severe contractures or deformities may need surgery on tendons, bones or joints to place their arms and legs in their correct positions which may make it easier to use a walker, braces or crutches.

* Support

A circle of support, including family, friends, volunteers, professional, and government support to help obtain community assistance, education, training programs, and information about prevention, diagnosis, and treatment.

* Alternative Therapies

Individuals with CP may benefit from alternative therapies such as acupuncture, massage, osteopathy, and homeopathy.

LONG TERM OUTLOOK

Most people with cerebral palsy experience a normal life span although those with severe forms of CP may have a reduced life span. As people with cerebral palsy age, they may experience typical aging impairments as well as long-term effects of chronic physical impairment, such as:

- * increase in spasms
- * increase in shortening of muscles (contractures)
- * joint problems (e.g., pain, loss of flexibility)
- * tight muscles
- * increase in back pain
- * emergence of incontinence
- * increase in incontinence
- * reduced energy levels

Factors that contribute to these effects include:

- * poor wheelchair seating and posture
- * spinal deformities
- * weight gain
- * severe learning disability
- * discontinuance of physical therapy
- * walking when it is increasingly difficult
- * inappropriate orthopedic surgery

Physical exhaustion from inadequate rest or recovery from illness or injury can lead to an overall decline in physical and mental function. Ways to maintain physical function include the following:

- * appropriate wheelchair seating and posture
- * assume various positions out of the wheelchair
- * use a wheelchair when fatigued and when walking is difficult
- * regular and appropriate exercise, including stretching exercises and exercises to maintain flexibility in joints
- * maintain ideal weight
- * have regular medical check-ups
- * avoid sustained mental stress
- * carefully consider proposed surgery
- * plan for appropriate rehabilitation after surgery

COPING

CP imposes a range of challenges both to the individual and his caregivers. Mastering skills reduces demands on caregivers and helps the individual obtain a degree of self-reliance, which helps build self-esteem.

- * Foster independence. Encourage any effort at independence, no matter how small. Just because you can do something faster and quicker doesn't mean you should.
- * Advocate. Speak up and ask questions.
- * Find support. Explore support programs, counseling, organizations to help with coping with cerebral palsy and its effects.
- * Explore assistive technology. A range of devices can help with communication, mobility, and daily tasks.
- * Encourage therapy - physical, speech, language, occupational

REFERENCES

The Department of Health and Human Services, Center for Disease Control and Prevention
<http://www.cdc.gov/ncbddd/dd/cp2.htm>

Neurology Channel
<http://www.neurologychannel.com/cerebralpalsy/symptoms.shtml>

Mayo Clinic
<http://www.mayoclinic.com/health/cerebral-palsy/DS00302/DSECTION=1>

| QUESTIONS | |
|--|---|
| Staff Name | Date |
| <p>Fill in your name and the date. Read each question carefully and select the correct letter of the answer or complete the question with a word, phrase, or explanation. Circle the correct answer, fill in the blank, or write a short answer, phrase, or explanation. Check your own answers after you have completed the questions. Return your unmarked training booklet and your completed answer sheet to the office.</p> | |
| 1 | <p>Cerebral palsy:</p> <ul style="list-style-type: none"> a. affects the ability to coordinate body movement and maintain balance and posture b. is a disease that is contagious and progressive c. originates in the muscles d. occurs only before birth |
| 2 | <p>Cerebral palsy does not get worse over time, but symptoms may change over time.</p> <ul style="list-style-type: none"> a. True b. False |
| 3 | <p>Cerebral palsy may be caused by all of the following EXCEPT:</p> <ul style="list-style-type: none"> a. brain infections b. head trauma c. brain hemorrhage d. CP in the mother |
| 4 | <p>Which of the following is a type of cerebral palsy:</p> <ul style="list-style-type: none"> a. Asphyxia b. Rubella c. Spastic d. Tonic-clonic |
| 5 | <p>An individual may have one or more types of cerebral palsy.</p> <ul style="list-style-type: none"> a. True b. False |
| 6 | <p>An <i>intention tremor</i> is when</p> <ul style="list-style-type: none"> a. an individual experiences abnormal pronunciation of speech b. a voluntary movement sets off trembling in the limb c. abrupt, jerky movements are mixed with slow, rhythmic movements d. uncontrolled bursts of electricity disrupt the brain's activity |
| 7 | <p>Cerebral palsy may result in:</p> <ul style="list-style-type: none"> a. curvature of the spine b. dental problems c. seizures d. nutrition problems e. all of the above |
| 8 | <p>A person diagnosed with CP would not be able to play basketball.</p> <ul style="list-style-type: none"> a. True b. False |
| 9 | <p>Any individual with cerebral palsy would benefit from:</p> <ul style="list-style-type: none"> a. behavioral services to improve motor development b. exercise to improve movement, strength, and balance c. surgery to eliminate seizures d. a caregiver who will do everything for him |
| 10 | <p>Which of the following would help an individual who has CP with speech and language problems:</p> <ul style="list-style-type: none"> a. Velcro shoe straps b. A grab bar c. Orthotics d. Computer |
| 11 | <p>Describe two things that would help reduce demands on caregivers and provide some self-reliance for an individual with CP.</p> |
| 12 | <p>Describe two things that would help an individual with CP maintain physical function.</p> |

| ANSWERS | |
|---------|---|
| 1 | Cerebral palsy: a. affects the ability to coordinate body movement and maintain balance and posture |
| 2 | Cerebral palsy does not get worse over time, but symptoms may change over time. a. True |
| 3 | Cerebral palsy may be caused by all of the following EXCEPT: d. CP in the mother |
| 4 | Which of the following is a type of cerebral palsy: c. Spastic |
| 5 | An individual may have one or more types of cerebral palsy. a. True |
| 6 | An <i>intention tremor</i> is when b. a voluntary movement sets off trembling in the limb |
| 7 | Cerebral palsy may result in: e. all of the above |
| 8 | A person diagnosed with CP would not be able to play basketball. b. False |
| 9 | Any individual with cerebral palsy would benefit from: b. exercise to improve movement, strength, and balance |
| 10 | Which of the following would help an individual who has CP with speech and language problems: d. Computer |
| 11 | Describe two things that would help reduce demands on caregivers and provide some self-reliance for an individual with CP. * Encourage any effort at independence * Advocate. * Find support. * Explore assistive technology * Encourage therapy |
| 12 | Describe two things that would help an individual with CP maintain physical function. * appropriate wheelchair seating and posture * assume various positions out of the wheelchair * use a wheelchair when fatigued and when walking is difficult * regular and appropriate exercise * maintain ideal weight * have regular medical check-ups * avoid sustained mental stress * carefully consider proposed surgery * plan for appropriate rehabilitation after surgery |