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## **Attention, Thinking, or Memory Problems** [1]

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Cognitive problems, also referred to as cognitive dysfunction or “chemo brain,” occur when a person has trouble processing information, which includes mental tasks related to attention span, thinking, and short-term memory.

Up to 75% of people with cancer experience cognitive problems during treatment, and up to 35% have issues that continue for months after treatment has finished. These difficulties usually vary in severity and often make it hard to complete daily activities. People who experience serious cognitive problems are encouraged to talk with their doctor, nurse, social worker, or another member of the health care team about ways to manage these issues.

### **Signs and Symptoms**

Relieving side effects, also called symptom management, [palliative care](#) [3], or supportive care, is an important part of cancer care and treatment. Talk with your health care team about any symptoms you or the person you are caring for experiences, including any new symptoms or a change in symptoms.

Cognitive problems include difficulties in many areas, such as:

- Trouble concentrating, focusing, or paying attention (short attention span)
- Mental “fog” or disorientation
- Difficulty with spatial orientation
- Memory loss or difficulty remembering things (especially details like names, dates, or phone numbers)
- Problems with comprehension or understanding
- Difficulties with judgment and reasoning
- Impaired arithmetic, organizational, and language skills (such as not being able to organize thoughts, find the right word, or balance a checkbook)
- Problems performing multiple tasks (multitasking)
- Processing information slower
- Behavioral and emotional changes, such as irrational behavior, mood swings, inappropriate anger or crying, and socially inappropriate behavior
- [Severe confusion \(delirium\)](#) [4]

The severity of these symptoms often depends on the person's age, stress level, history of depression or anxiety, coping abilities, and access to emotional and psychological resources.

## Causes

Although cancer survivors commonly use the term "chemo brain" to describe difficulty thinking clearly after cancer treatment, people who do not receive chemotherapy report similar symptoms. Continuing research into the wide range of cognitive problems experienced by people with cancer has shown they can be caused by a number of factors in addition to chemotherapy [5], including:

- Radiation treatment [6] to the head and neck, or total body irradiation
- Brain surgery, in which areas of the brain may be damaged or disrupted during a biopsy or the removal of a cancerous tumor
- Hormone therapy, immunotherapy, and other medications (such as anti-nausea medications, antibiotics, pain medications, immunosuppressants, antidepressants, anti-anxiety medications, heart medications, and medications to treat sleep disorders)
- Infections [7], especially those of the central nervous system (brain and spinal cord), and infections that cause a high fever
- Brain cancer [8]
- Other cancers that have metastasized (spread) to the brain
- Other conditions or symptoms related to cancer or cancer treatments, including anemia [9], sleep problems [10], fatigue, hypercalcemia [11] (high blood calcium), and electrolyte (a mineral in your body, such as potassium and sodium) imbalances that can lead to dehydration or organ failure
- Emotional responses, such as stress, anxiety [12], or depression [13]
- Not having enough of specific vitamins and minerals, such as iron, vitamin B, or folic acid
- Other brain or nervous system disorders unrelated to cancer

## Management

Cognitive problems caused by a reversible condition, such as anemia or an electrolyte imbalance, usually resolve after the condition is treated. Likewise, problems caused by a medication should go away after the medication is stopped. Problems related to cancer in the brain usually improve with treatment, but some symptoms may continue. Unfortunately, cognitive problems related to chemotherapy ("chemo brain"), radiation therapy, or other cancer treatments may continue indefinitely. Management of these long-term cognitive problems may include:

- Medications, including stimulants, cognition-enhancing drugs commonly used to treat Alzheimer's disease, antidepressants, and opiate antagonists (drugs that block the actions of narcotics, such as morphine)
- Occupational therapy and vocational rehabilitation, to help people with the activities of daily living and job-related skills
- Cognitive rehabilitation (also known as neuropsychological rehabilitation) and cognitive training, to help patients improve their cognitive skills and find ways to cope with cognitive problems

## Strategies for coping with cognitive problems

The following strategies may help you better cope with attention, thinking, and memory difficulties and help keep you mentally sharp:

- Keep a log or checklist of daily reminders. Put it in a convenient location, where you can look at it frequently throughout your day. If necessary, keep a duplicate copy at work.
- Take on one task at a time and avoid distractions.
- Carry around a small pad and a pen or pencil to easily write down notes and reminders. There are also a number of note-making apps available for most smartphones and tablets.
- Use a calendar or daily organizer to keep track of upcoming appointments, activities, and important dates.
- Place post-it notes around the house and workplace to remind you of important tasks. You may also want to set reminders using your phone or email calendar.
- Use word play, such as rhyming, to help you remember things.
- Get plenty of rest.
- Make time for physical activity, as it can increase mental alertness. Try walking, swimming, or gardening. Yoga or meditation can also help you relax and regain some mental clarity.
- Exercise your brain by doing brain-strengthening mental activities, such as solving crosswords or puzzles, painting, playing a musical instrument, or learning a new hobby.
- Don't be afraid to ask questions at your doctors' appointments, even if you feel like you are repeating yourself. Then keep track of the important facts you discuss with your doctor using a special notebook, a voice recorder, or a resource from Cancer.Net, such as the [Cancer.Net mobile app](#) [14] or an [ASCO Answers guide](#) [15]. If it is too overwhelming, ask a friend or family member to go to the appointment with you so he or she can take notes and review them with you after the visit.
- Talk with your employer if you are having problems at work. Discuss potential ways your employer could support you, such as modifying your workload and deadlines. Read more about [going back to work after cancer](#) [16].
- Prepare for the next day by setting out the things you will need the night before.
- Color code or label certain cabinets or drawers where you store things around your home.
- Put things, such as car keys, back in their designated place after you use them so they will be easy to find the next time you need them.
- Eliminate clutter.
- Make sure important phone numbers are stored in your cell phone or are visibly displayed next to your home phone. You may also want to carry a small address book in case you forget to bring your cell phone when you go out.

In addition, don't be afraid to ask your family and friends for help. If you need additional assistance to cope with cognitive problems, talk with your doctor or other health care team members about [counseling](#) [17] and other resources.

## Cognitive problems in children

Young children (age 5 and younger) are more likely to have long-term cognitive problems, especially those who receive radiation therapy that is directed at the head, neck, or spinal cord; total body radiation; and/or chemotherapy delivered directly into the spine (intrathecal

chemotherapy) or the brain (intraventricular chemotherapy). These cognitive problems can occur months or years after treatment ends and can continue into adulthood.

Some of these issues include:

- Decreased overall intelligence (lower IQ)
- Learning disabilities
- Decreased attention span and attention deficit disorders
- Delayed development, including delayed social, emotional, and behavioral development
- Lower academic achievement (especially in reading, language, and mathematics)
- Decreased receptive language skills (the ability to understand or comprehend language) and expressive language skills (the ability to put thoughts together in a way that makes sense)
- Decreased nonverbal and verbal memory skills

Your child may receive occupational therapy, speech therapy, behavior therapy, social skills training, cognitive rehabilitation, and/or medications (such as methylphenidate for attention deficit disorders) to help treat cognitive problems. Some children may need to learn new ways of learning in school or maintaining attention. Additional in-school options such as specialized reading and mathematics instruction, special education programs, and IEPs (individualized education programs) are also helpful. Because early intervention seems to offer the greatest benefit, it is important for parents to be aware of possible cognitive problems and to talk with their child's pediatrician, oncologist, or another member of the health care team as soon as they suspect a problem.

## **More Information**

[Emotional and Physical Matters](#) [18]

[Rehabilitation](#) [19]

[Late Effects of Childhood Cancer](#) [20]

[Managing Side Effects](#) [21]

## **Additional Resources**

[Oncology Nursing Society: The Cancer Journey?Memory/Mental Impairment](#) [22]

[LIVESTRONG: Cognitive Changes](#) [23]

[CancerCare: Doctor, Can We Talk About Chemobrain?](#) [24]

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## **Links:**

[1] <http://www.cancer.net/navigating-cancer-care/side-effects/attention-thinking-or-memory-problems>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/node/25282>

[4] <http://www.cancer.net/node/25050>

[5] <http://www.cancer.net/node/24676>

[6] <http://www.cancer.net/node/24677>

- [7] <http://www.cancer.net/node/25256>
- [8] <http://www.cancer.net/node/18562>
- [9] <http://www.cancer.net/node/25926>
- [10] <http://www.cancer.net/node/25058>
- [11] <http://www.cancer.net/node/25255>
- [12] <http://www.cancer.net/node/25481>
- [13] <http://www.cancer.net/node/25480>
- [14] <http://www.cancer.net/node/25555>
- [15] <http://www.cancer.net/node/25358>
- [16] <http://www.cancer.net/node/24549>
- [17] <http://www.cancer.net/node/24699>
- [18] <http://www.cancer.net/node/25109>
- [19] <http://www.cancer.net/node/25397>
- [20] <http://www.cancer.net/node/24571>
- [21] <http://www.cancer.net/node/25238>
- [22] <http://www.thecancerjourney.org/side/se-18>
- [23] <http://www.livestrong.org/Get-Help/Learn-About-Cancer/Cancer-Support-Topics/Physical-Effects-of-Cancer/Cognitive-Changes>
- [24] [http://www.cancer.org/pdf/fact\\_sheets/fs\\_chemobrain\\_doctor\\_talk.pdf](http://www.cancer.org/pdf/fact_sheets/fs_chemobrain_doctor_talk.pdf)