

## “Chemo brain:”

It’s frustrating, distressing,  
and very real – and it is manageable.



Chemo brain is a lesser-known side effect of chemotherapy, and may even be a subtle one. But subtle or not, it can be very frustrating to the person experiencing it.

Fortunately, the condition has been getting increased attention from doctors and researchers. As a result, anyone experiencing chemo brain should feel comfortable addressing the issue with his or her doctor. There is no longer any reason for patients to feel that they are “going crazy” or that it is “all in their heads.” On the contrary, chemo brain is very real.

### What exactly is chemo brain?

According to patients who complain of it and to scientists who research it, chemo brain is a cognitive dysfunction or impairment that results in:

- Memory lapses
- Trouble concentrating
- Inability to remember certain things
- Inability to do more than one thing at a time
- Trouble remembering common words
- Inability to learn new skills

Not everyone experiences chemo brain and for many of those who do, it comes on quickly and lasts only briefly. For others, however, it may mean long-lasting mental changes that affect daily activities.

### How does science know chemo brain is real?

It can see it. Imaging tests of people who have complained of chemo brain have shown smaller brain size in the areas of the brain that are part of memory, planning, putting thoughts into action, monitoring thought processes and behavior, and inhibition. Other imaging studies have compared the brains of cancer survivors treated with chemotherapy to the brains of people who were not treated, and the former group showed changes in brain activity that did not appear in the later group. The picture is clear: Although the brain usually recovers over time, it can be impacted by chemotherapy, proving that the condition known as chemo brain is very real.

### Does science know what causes chemo brain?

Unfortunately, no – at least, not entirely. What is known is that most people with chemo brain have it as a byproduct of other chemotherapy side effects such as anemia, fatigue, and depression. All of these side effects have the potential for causing the side effect of chemo brain. And the good news is that all of these conditions are treatable.

What is confounding researchers now is how to treat those patients whose chemo brain isn't caused by one of the above factors. It's believed that as many as 25-30 percent of patients, both men and women, fall into this category.

While the specific cause of chemo brain is unknown, and there is not currently a way to predict who will or will not get it, nor how to prevent it, researchers are making progress. New studies are yielding more and more insights.

### What research is available on chemo brain?

One of the biggest hurdles has already been overcome: Chemo brain is now recognized as a side effect of cancer treatment. With that hurdle behind us, studies are being done to learn more about the condition. For example, there are studies underway to:

- Look at which chemotherapy drugs and dosages are most likely to cause chemo brain.
- Determine which patients are most likely to be chemo brain sufferers. To do this, people's mental abilities are measured before treatment, after treatment, and then they are compared.
- Investigate ways to protect the brain from chemo side effects, such as with more specific, targeted drugs that focus on the cancer cells and thus spare normal, healthy cells.
- Look at medications for depression, attention-deficit hyperactivity disorder (ADHD), and dementia as possible medications for chemo brain.
- Look at genetic differences that may make some people more likely than others to experience chemo brain. One particular gene, called APOE, is being examined more closely. Research has shown that one version of this gene, E4, is associated with Alzheimer's disease and, when present, it increases the chance for cognitive problems after traumatic brain injury. Studies are trying to find out if carriers of the E4 gene who get chemotherapy may have a higher risk of developing long-term chemo brain.
- Investigate whether certain hormonal factors may make some people more susceptible to mental effects from chemotherapy. Estrogen is one target of investigation.
- Further examine the effects of chemotherapy drugs on nerve and brain cells. Recent studies have already shown clear evidence of nerve damage from at least some forms of chemotherapy. Identifying which nerve or brain cells are most at risk is critical to developing ways to reduce the damage.

### How can you manage chemo brain?

Since most people who have chemo brain have it because of another side effect such as anemia, fatigue, etc., and since such side effects are treatable, this is the first avenue doctors will take. If treating the original side effect doesn't help the chemo brain, there are other places to turn and other strategies to employ that can help people cope.

Another consideration should be a visit to a neurologist, psychoneurologist, or psychologist who is an expert at testing brain functioning, including diagnosing the symptoms of chemo brain. With testing, these professionals can determine the scope of the problem and then suggest the most appropriate mental exercises.

Here are just some of the exercises and management techniques usually recommended:

- Use a detailed daily planner, keeping everything in one place – appointments, schedules, to-do lists, important birthdays and anniversaries, phone numbers and addresses, meeting notes, and any other notes.

- Exercise the brain. Take a class, do word puzzles, or learn a new language.
- Get enough rest and sleep.
- Exercise the body. Regular physical activity is not only good for the body, but it also improves mood, alertness, and stamina.
- Eat lots of vegetables, which have been shown to help maintain brainpower.
- Establish routines such as following the same daily schedule and establishing a single spot for placing all commonly lost objects.
- Focus on one thing at a time; don't try multi-tasking.
- Track memory problems by keeping a diary of the time they are experienced and the events going on simultaneously. Tracking when the problems occur can help one plan around them – avoiding important conversations at those times, for example.
- Try not to focus so much on the chemo brain symptoms, remembering that many people who never had chemotherapy also struggle with memory issues.

#### A word of caution:

It's important to remember that most people do eventually recover fully from the effects of chemotherapy, usually a year or two after the end of therapy. Because of this and because chemo brain is usually mild, any plans for the proven and effective therapies of chemo drugs should not be changed just to try to prevent chemo brain.

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