

WEB EXCLUSIVES

# What Patients Need to Know About Chemobrain

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*What the latest research shows about chemobrain after breast cancer therapy.*

Men and women treated with chemotherapy sometimes report that they suffer from “chemobrain” or “chemofog,” an effect doctors refer to as “chemotherapy-induced neurocognitive impairment.” Much of the research in chemobrain has been in women treated for breast cancer. In fact, about 20 to 30 percent of patients report some problems with word finding, short-term memory, multitasking, learning new skills, processing complex information and concentration.

Symptoms may be minor or more serious and on a day-to-day basis most women can perform their regular work activities, though it may be more difficult. Cognitive changes may not be obvious to others since some women are good at adapting to a reduced memory, including writing things down and keeping to a tight schedule. For many, cognitive changes are a temporary mild annoyance, while for others, the long-lasting debilitating condition may prevent return to work and normal functioning.

When a woman complains of chemobrain, doctors look for other factors that may be contributing to the problem, including anemia, thyroid problems, sleep disorders, anxiety, depression, menopausal symptoms, and medications. Since some of these factors can influence cognitive testing results, researchers have had difficulty fully understanding the biology behind chemobrain. Nonetheless, it appears certain types of chemotherapy can indeed directly affect the brain.

In 2006, researchers used PET scans to measure brain metabolism in patients receiving chemotherapy. In patients who noted neurocognitive symptoms, the resting brain metabolism rate was lower than for patients who did not have symptoms. Researchers also noted that when patients with symptoms performed complex tasks there was a large increase in blood flow to certain parts of the brain, suggesting those chemotherapy patients worked harder than control subjects to recall the same information.

Developing interventions to alleviate these problems is very important. For many patients, the neurocognitive changes gradually improve over time, so strategies to compensate for the temporary deficits can be helpful. As suggested by the Mayo Clinic, these include:

- >Decrease workload
- >Avoid multiple tasks
- >Prepare for tomorrow, today
- >Make lists
- >Increase sleep
- >Use mnemonics and word-play
- >Use (electronic) calendars to record appointments
- >Use key chains that beep when pressed
- >Color-code and label items
- >Track memory problems in small diaries
- >Do crossword puzzles and Sudoku squares to keep the mind sharp

There is very limited information on pharmacologic interventions, but some of the psychostimulants, such as Ritalin (methylphenidate) and Provigil (modafinil), are being evaluated.

The number of cancer survivors continues to grow as cancer patients are treated more aggressively. Some are receiving more chemotherapy, higher dosages, and new chemotherapeutic agents. The neurologic complications of cancer chemotherapy are likely to become more complex.

The recognition and treatment of chemotherapy-induced neurotoxicity will become a frequent and important clinical problem. Clinicians face many challenges, including attempting to minimize neurocognitive side effects of treatment without sacrificing efficacy, gaining a better understanding of the pathogenesis of neurocognitive changes, and providing rehabilitative services to patients, to optimize quality of life.

—Cara A. Miller, graduate student at Gallaudet University, contributed to this article. Kenneth D. Miller, MD, is assistant professor of medicine at Yale School of Medicine, editor of *Choices in Breast Cancer Treatment: Medical Specialists and Cancer Survivors Tell You What You Need to Know* (Johns Hopkins Press, 2008), and director of the Connecticut Challenge Survivorship Clinic and the supportive care program at Yale Cancer Center.