

## Breast Cancer Chemotherapy

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**Abstract:** Chemotherapy for breast cancer uses drugs to target and destroy breast cancer cells. These drugs are usually injected directly into a vein through a needle or taken by mouth as pills. Chemotherapy for breast cancer frequently is used in addition to other treatments, such as surgery, radiation or hormone therapy. Chemotherapy can be used to increase the chance of a cure, decrease the risk of the cancer returning, alleviate symptoms from the cancer or help people with cancer live longer with a better quality of life.

**Keywords:** Chemotherapy, metastasizing, menopause, osteopenia and osteoporosis, heart damage.

The cancer has recurred or spread, chemotherapy may control the breast cancer to help you live longer. Or it can help ease symptoms the cancer is causing. Chemotherapy for breast cancer also carries a risk of side effects — some temporary and mild, others more serious or permanent. Your doctor can help you decide whether chemotherapy for breast cancer is a good choice for you. After you have surgery to remove the breast cancer, your doctor may recommend chemotherapy to destroy any undetected cancer cells and reduce your risk of the cancer recurring. This is known as adjuvant chemotherapy. Your doctor may recommend adjuvant chemotherapy if you have a high risk of the cancer recurring or spreading to other parts of your body (metastasizing), even if there is no evidence of cancer after surgery. You may have a higher risk of metastasis if cancer cells are found in lymph nodes near the affected breast.

Chemotherapy is sometimes given before surgery (known as neoadjuvant therapy or preoperative chemotherapy) to shrink larger cancers. This may:

- ✓ Allow the surgeon the best chance of removing the cancer completely
- ✓ Enable the surgeon to remove only the cancer, rather than the entire breast
- ✓ Decrease the extent of disease in lymph nodes, allowing for less invasive lymph node surgery
- ✓ Decrease the chance the cancer will return
- ✓ Help your doctor understand how well your cancer responds to chemotherapy, which helps clarify prognosis and the best chemotherapy drug choice

Neoadjuvant therapy is often used for:

- ✓ Inflammatory breast cancer
- ✓ HER2-positive breast cancer
- ✓ Triple-negative breast cancer
- ✓ High-grade breast cancers
- ✓ Cancers that have spread to the lymph nodes
- ✓ Larger breast cancers

If breast cancer has spread to other parts of your body and surgery isn't an option, chemotherapy can be used as the primary treatment. It may be used in combination with targeted therapy.

The main goal of chemotherapy for advanced breast cancer is generally to improve quality and length of life rather than to cure the disease.

Chemotherapy medications travel throughout the body. Side effects depend on the drugs you receive and your reaction to them. Side effects may get worse during the course of treatment. Most side effects are temporary and subside once treatment is finished. Sometimes chemotherapy can have long-term or permanent effects.

In the process of targeting fast-growing cancer cells, chemotherapy drugs can also damage other fast-growing healthy cells, such as those in the hair follicles, bone marrow and digestive tract. These side effects often go away after treatment is finished or within a year after completing chemotherapy. In some cases, they may be long lasting.

Certain chemotherapy drugs for breast cancer can cause long-term side effects, including:

**Infertility.** One possible side effect that may not go away is infertility. Some anti-cancer drugs damage the ovaries. This may cause menopause symptoms, such as hot flashes and vaginal dryness. Menstrual periods may become irregular or stop (amenorrhea). If ovulation ceases, pregnancy becomes impossible.

Depending on your age, chemotherapy may induce a premature permanent menopause. Discuss with your doctor your risk of permanent menopause and its consequences.

If you continue to menstruate, you may still be able to get pregnant, even during treatment or after treatment is completed. But because the effects of chemotherapy are dangerous to the fetus, talk with your doctor about appropriate birth control options before treatment begins.

- **Bone thinning.** Women who experience menopause early because of chemotherapy may have a higher risk of the bone-thinning conditions osteopenia and osteoporosis. It's generally recommended that these women have periodic bone density tests and, possibly, treatments to prevent further bone loss.
- **Heart damage.** Chemotherapy carries a small risk of weakening the heart muscle and causing other heart problems. Certain chemotherapy medications are associated with a higher risk of future heart problems.
- **Leukemia.** Rarely, chemotherapy for breast cancer can trigger a secondary cancer, such as cancer of the blood cells (leukemia), several years after the chemotherapy is completed.

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