

# Chemotherapy and Side Effects

## What is chemotherapy?

Chemotherapy drugs kill or disable cancer cells. Although chemotherapy is a treatment option for most types of breast cancer, it is not always needed. The decision to use it is based on a few things:

- tumor stage and certain tumor characteristics (such as hormone receptor status),
- age,
- overall health, and
- personal preferences.

## Adjuvant (after surgery) chemotherapy

For those with early breast cancer, chemotherapy is often given after breast surgery (called adjuvant chemotherapy) but before radiation therapy. It helps lower the risk of cancer returning by getting rid of cancer that might still be in the body. Adjuvant chemotherapy usually starts within 4 to 8 weeks after surgery.

## Neoadjuvant (before surgery) or preoperative chemotherapy

Chemotherapy is sometimes used before surgery (called neoadjuvant or preoperative chemotherapy). In women with large tumors who need a mastectomy, neoadjuvant chemotherapy may shrink the tumor enough so that a lumpectomy becomes an option. In women with locally advanced or inflammatory breast cancer, it can shrink the tumor in the breast and/or in the lymph nodes. This can make it easier to remove the cancer with surgery.

## How is chemotherapy given?

Most chemotherapy drugs are given through an IV (intravenously) in an outpatient setting at a hospital or clinic. At each visit, an IV is inserted into the arm. This allows the drugs to drip into the bloodstream. A few chemotherapy drugs are taken by mouth.

## How often and for how long is chemotherapy given?

Chemotherapy is often given in cycles, with days or weeks off between treatments. These cycles give your body a chance to heal between treatments. A full course usually lasts 3 to 6 months.

## Common chemotherapy drugs for early and locally advanced breast cancer

The most effective drugs for treating early and locally advanced breast cancer are:

Drug (abbreviation)	Brand name
Cyclophosphamide (C)	Cytoxan
Docetaxel (T)	Taxotere
Doxorubicin (A)	Adriamycin
Epirubicin (E)	Ellence
Methotrexate (M)	Maxtrex
Paclitaxel (T)	Taxol

Although each of these drugs is effective on its own, combining drugs makes them even better at killing cancer cells. Common drug combinations used to treat early and locally advanced breast cancer are listed below. Other combinations are also used.

## Chemotherapy drug combinations for early and locally advanced breast cancer

Drug combination	Drug names
AC	doxorubicin and cyclophosphamide
AC—> Paclitaxel (T)	doxorubicin and cyclophosphamide followed by paclitaxel
AC—> Docetaxel (T)	doxorubicin and cyclophosphamide followed by docetaxel
TAC	docetaxel, doxorubicin and cyclophosphamide
TC	cyclophosphamide and docetaxel
CMF	cyclophosphamide, methotrexate (Rheumatrex), and 5-fluorouracil (Adrucil)
TCH	docetaxel, carboplatin and trastuzumab (Herceptin)*
TH	Paclitaxel and trastuzumab*
ACTH	doxorubicin and cyclophosphamide followed by paclitaxel and trastuzumab*

\* Only used for HER2/neu-positive breast cancers. TCH and TH are not used without trastuzumab.

## Coping with side effects

Chemotherapy has some side effects, but most begin to go away shortly after treatment ends. Your doctor can prescribe medications to prevent or relieve some side effects.

## Common side effects

Your side effects will depend on the chemotherapy drugs you are given. Some of the most common side effects are described below.

### Nausea and vomiting

Some (but not all) chemotherapy drugs cause nausea and vomiting. Your doctor will prescribe medications to help reduce or prevent nausea and vomiting and give you instructions on how to use them.

Eating bland, easy-to-digest foods that do not have an odor may help. Eating several small meals throughout the day (instead of larger meals) may also help.

### Hair loss (alopecia)

With some chemotherapy drugs (including doxorubicin, paclitaxel or docetaxel), you almost always lose your hair.

Though it's most visible on your head, hair loss may occur all over your body (including eyebrows and pubic hair). Using a gentle shampoo and washing your hair less often may reduce hair loss.

Some women choose to cut their hair short once they start chemotherapy to gain some control. If you would like to wear a wig, find one to match your hair color and style before treatment begins. Hair will begin to grow back 1 to 2 months after chemotherapy ends.

### Early menopause (when your menstrual periods stop)

Some chemotherapy drugs can stop regular menstrual periods. In women under 40, this condition may be temporary and periods will start again. In women over 40, it is more often permanent and menopause begins earlier than expected.

### Fatigue

This is a common side effect. Try to get plenty of rest and ask family and friends for help. Exercise may help relieve fatigue.

### Infections

Because chemotherapy reduces the white blood cell count, infections are more likely to occur. You can help prevent infections by washing your hands often and staying away from others who are ill. If you get a cut, clean it right away. If you have any sign of infection such as fever while on chemotherapy, contact your doctor right away.

### Mouth and throat sores (mucositis or stomatitis)

Some chemotherapy drugs cause sores in the mouth or throat. These sores can make it painful to eat or drink. Your doctor can prescribe a special mouthwash or other medication to relieve pain and treat the sores. Rinsing your mouth with baking soda and water may help with mouth sores. Avoid mouthwashes that contain alcohol, which can make mouth sores worse. Mouth sores go away once chemotherapy ends.

### Dental check-up

Get a dental check-up before starting chemotherapy. During treatment, brush your teeth and gums after each meal and at bedtime using a soft toothbrush.

### Weight gain

Some women gain weight during chemotherapy. Eating healthy foods and exercising may help maintain your normal weight.

### Nail weakness

Some chemotherapy drugs (such as paclitaxel and docetaxel) can weaken your fingernails and toenails. The nails become sore and may fall off. Keeping your nails short during treatment may make nail care easier. Your nails will return to normal once chemotherapy ends.

### Cognitive function (cancer brain, chemo-brain)

Some people have cognitive problems after chemotherapy. Problems include mental “foggy” and trouble with concentration, memory and multi-tasking. Most people have mild symptoms. Some may have more troubling cognitive problems that can impact daily life. Symptoms may last for 1 to 2 years after treatment or longer. Most women say these symptoms go away over time. The longer term impact of chemotherapy on cognitive function is under study.

## Resources

Susan G. Komen  
1-877 GO KOMEN (1-877-465-6636), [www.komen.org](http://www.komen.org)  
Questions to Ask Your Doctor  
[www.komen.org/questions](http://www.komen.org/questions)

American Cancer Society  
1-800-ACS-2345, [www.cancer.org](http://www.cancer.org)

National Cancer Institute  
1-800-4-CANCER, [www.cancer.gov](http://www.cancer.gov)

### Related fact sheets in this series:

- Clinical Trials
- Getting the Support You Need
- Making Treatment Decisions

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