

What Is Chemotherapy? How It Works

Chemotherapy (also called chemo) is a cancer treatment that uses drugs to kill cancer cells. It works by killing or stopping the growth of fast-growing cells. Because it also affects some healthy fast-growing cells, it can cause side effects such as fatigue, but these often get better after treatment ends.

The simple version

Chemotherapy (also called chemo) is a type of cancer treatment that uses drugs to kill cancer cells.

It works by killing cancer and other fast-growing cells, or by stopping them from growing. Doctors use chemotherapy for two main reasons:

- **To treat cancer:** it can be used to cure cancer, lessen the chance it will return, or stop or slow its growth.
- **To ease cancer symptoms:** it can shrink tumors that are causing pain and other problems.

Chemotherapy uses drugs to kill or slow the growth of fast-growing cancer cells.

How chemotherapy is used with other treatments

Chemotherapy is used to treat many types of cancer. For some people, it is the only treatment they receive. Most often, though, it is used together with other cancer treatments.

When used with other treatments, chemotherapy can:

- make a tumor smaller before surgery or radiation therapy (called neoadjuvant chemotherapy)
- destroy cancer cells that may remain after surgery or radiation therapy (called adjuvant chemotherapy)
- help other treatments work better
- kill cancer cells that have returned or spread to other parts of your body

Why chemotherapy causes side effects

Chemotherapy kills fast-growing cancer cells. It also kills or slows healthy cells that grow and divide quickly. Examples are the cells that line your mouth and intestines, and the cells that make your hair grow. Damage to these healthy cells may cause side effects, such as mouth sores, nausea, and hair loss.

Side effects often get better or go away after you have finished chemotherapy.

The most common side effect is fatigue, which is feeling exhausted and worn out. You can prepare for fatigue by:

- asking someone to drive you to and from chemotherapy
- planning time to rest on the day of and day after chemotherapy
- asking for help with meals and childcare on the day of and at least one day after chemotherapy

Side effects happen because chemo also affects healthy fast-growing cells.

Practical side-effect guides can help you track what is happening between visits: mouth sores during cancer treatment, nausea during cancer treatment, fatigue during cancer treatment, fever during chemo, and low white blood cells during chemotherapy.

What to expect

How it is given. Chemotherapy may be given in many ways. It can be pills, capsules, or liquids you swallow (oral). It can go directly into a vein through an IV. It can be an injection, or a cream you rub onto your skin. It is most often given through an IV, using a thin needle placed in a vein in your hand or lower arm. It may also be given through a catheter (a thin, soft tube), a port (a small disc placed under the skin), or with the help of a pump.

Where you go. You may receive chemotherapy during a hospital stay, at home, or as an outpatient at a doctor's office, clinic, or hospital. Outpatient means you do not stay overnight.

How often. Treatment schedules vary widely. Chemotherapy is often given in cycles. A cycle is a period of treatment followed by a period of rest. For instance, you might receive chemotherapy every day for one week, then have three weeks with no chemotherapy. Those four weeks make up one cycle. The rest period gives your body a chance to recover and build new healthy cells.

Ask for the plan in writing. Before the first cycle, ask for the regimen name and how long one cycle lasts. Ask how many cycles are expected and how long each session takes. Ask which medicines you take at home and when your blood tests are due. Ask what temperature counts as a fever worth calling about, and which number to use at night and on weekends.

It is best not to skip a treatment. Sometimes your doctor may change your schedule if you are having certain side effects. If this happens, your doctor or nurse will explain what to do.

If your schedule lists a specific regimen name, see FOLFOX, FOLFIRINOX, R-CHOP, ABVD, AC-T, or Carboplatin-Taxol. For infusion-day logistics, see What to Pack for Chemotherapy.

How you will know if it is working

You will see your doctor often. During these visits, they will ask how you feel and do a physical exam. They will also order medical tests and scans. Tests might include blood tests. Scans might

include MRI, CT, or PET scans.

You cannot tell if chemotherapy is working from its side effects. Some people think severe side effects mean chemotherapy is working well. Others think no side effects mean it is not working. Neither is true. Side effects have nothing to do with how well chemotherapy is fighting your cancer.

Your doctor uses exams and scans — not your side effects — to see if chemo is working.

Eating and working during chemotherapy

Chemotherapy can damage the healthy cells that line your mouth and intestines. That can cause eating problems. Tell your doctor or nurse if you have trouble eating. You might also find it helpful to speak with a dietitian.

Many people can work during chemotherapy, as long as they match their work schedule to how they feel. If your job allows, see whether you can work part-time, or from home on days you do not feel well. Many employers are required by law to change your work schedule to meet your needs during cancer treatment.

When to get help sooner

- **Call 911 or go to an emergency department if** you cannot catch your breath, your chest hurts, or you feel faint and cannot stay upright. Do not wait for the clinic to open. Do not drive yourself.
- **Phone your cancer team the moment** you run a temperature of 100.4°F (38°C) or higher ([cdc.gov/cancer-preventing-infections/patients/fever.html](https://www.cdc.gov/cancer-preventing-infections/patients/fever.html)), or chills and sweats begin. Chemo lowers the white cells that fight infection, and CDC treats a fever during chemo as a medical emergency. Use the day or night number and do not wait for morning. If you cannot get hold of anyone quickly, go to an emergency department and tell the staff there that you are on chemotherapy.
- **Call your care team right away, at any hour, if** there is redness or swelling around a port or IV line, or burning when you pass urine, or mouth sores stop you eating, even with a normal temperature ([CDC](https://www.cdc.gov/cancer-preventing-infections/patients/symptoms.html) ([cdc.gov/cancer-preventing-infections/patients/symptoms.html](https://www.cdc.gov/cancer-preventing-infections/patients/symptoms.html))). [NCI](https://www.cancer.gov/about-cancer/treatment/side-effects/infection) ([cancer.gov/about-cancer/treatment/side-effects/infection](https://www.cancer.gov/about-cancer/treatment/side-effects/infection)) says infections need urgent care. A normal reading is not a reason to wait.
- **Call your care team within a day or two if** nausea means you cannot keep food down, or loose stools do not settle. These are the problems that are easy to fix early and hard to fix late.

Source: National Cancer Institute (cancer.gov/about-cancer/treatment/types/chemotherapy)

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