PROCEDURE

Chemotherapy

Chemotherapy uses medicines to destroy cancer cells or slow their growth.

PURPOSE
Destroy, control, or slow cancer cells throughout the body

PROCEDURE TYPE
Therapeutic; medicines given by infusion, injection, or mouth

WHERE IT IS DONE
Outpatient clinic, hospital bedside, or sometimes at home

ANAESTHESIA
None; local numbing medicine may help with line placement

HOW LONG IT TAKES
Minutes to several days, based on the treatment regimen

PREPARATION
Blood tests, medicine review, and sometimes central line placement

RECOVERY
Usually same day; driving restrictions follow medicines and side effects

MAIN RISKS
Infection, bleeding, nausea, and organ or nerve damage

RESULTS
Assessed over treatment cycles with symptoms, tests, and scans

Overview

Chemotherapy uses drugs to destroy cancer cells or stop them from growing and dividing. Because these medicines can travel through the bloodstream, they may treat cancer throughout the body.

Chemotherapy may be given through an intravenous (IV) line, taken by mouth, injected, or delivered into a specific body space. Oral chemotherapy requires the same attention to safe handling and timing as other forms.

A treatment plan is called a regimen and may contain one medicine or several. Treatment is often divided into cycles , with treatment days followed by rest days that allow healthy cells to recover. Chemotherapy may be used alone or with surgery, radiation therapy, immunotherapy, targeted therapy, or hormone therapy.

Why the procedure is performed

Chemotherapy may be used to:

The expected benefit depends on the cancer type and stage, previous treatment, test results, and your general health. Ask whether the goal is cure, reducing recurrence risk, controlling cancer, or easing symptoms.

- Cure a cancer that responds to chemotherapy
- Shrink a tumour before surgery or radiation therapy
- Destroy cancer cells that may remain after another treatment
- Control cancer growth or delay its return
- Relieve symptoms caused by advanced cancer
- Prepare for a stem cell or bone marrow transplant

Who should and should not have it

Chemotherapy may be offered when a cancer is likely to respond and its potential benefits outweigh its risks. It may not be appropriate if another treatment offers a better balance of benefits and harms, the cancer is unlikely to respond, or treatment does not match your goals.

Treatment may need to be delayed, reduced, changed, or avoided if you have:

These are not always absolute exclusions; decisions depend on the medicine and your circumstances.

Some chemotherapy can affect fertility. Before treatment, ask about sperm, egg, embryo, or ovarian tissue preservation if having biological children may matter to you.

- A serious active infection
- Very low white blood cells, red blood cells, or platelets
- Liver, kidney, heart, lung, or nerve problems affected by the planned drug
- A previous severe reaction to the same medicine
- Poor recovery from a recent treatment or operation
- Pregnancy, when the medicine could harm the pregnancy

How to prepare

Follow your treating facility's instructions because preparation varies by regimen.

You will usually have blood tests to check blood cell levels and liver and kidney function. Some medicines also require heart, hearing, lung, or nerve tests.

Give your team a complete list of prescription and non-prescription medicines, vitamins, herbs, and supplements. Some may change how chemotherapy works or increase bleeding and other side effects. Do not stop prescribed medicine unless your team tells you to.

Ask whether you should eat or fast. Many regimens do not require fasting, but instructions differ.

You may need an implanted port or another central line if treatment is frequent or difficult to give through small veins. Arrange transport if you will receive medicine that causes sleepiness or if this is your first treatment. Wear comfortable clothing that allows access to your IV or port.

What happens during the procedure

Before treatment, your team reviews your symptoms, blood results, weight, and medicines. Treatment may be postponed or adjusted if your body needs more time to recover.

You may receive medicines to reduce nausea, allergic reactions, or other effects. For IV chemotherapy, a nurse places a tube into a vein or connects the infusion to your central line. The medicine may be given by syringe, infusion bag, or portable pump.

Tell staff immediately about burning, pain, swelling, or redness near the IV, or breathing difficulty, itching, dizziness, or sudden discomfort.

Infusions may take minutes, hours, or several days. Oral chemotherapy is taken on a precise schedule. Do not crush, split, or open tablets or capsules unless your cancer pharmacist says it is safe.

Recovery and what to expect afterward

Pain: Treatment is not usually painful beyond needle discomfort, but some medicines can later cause mouth sores, aches, or nerve pain.

Eating: You can often eat normally. Small meals, bland foods, and regular fluids may help with nausea. Contact your team if vomiting, diarrhoea, mouth pain, or swallowing problems prevent you from drinking.

Activity: Light activity is often possible, although fatigue may build over several cycles. Follow

advice about crowds, contact sports, swimming, or other activities if your blood counts are low or you have a central line.

Driving: Do not drive if you are sleepy, weak, dizzy, or taking medicine that impairs alertness. Your centre may require someone to drive you home.

Work: Some people continue working; others reduce hours or take leave. Side-effect patterns may become clearer after the first cycles.

Risks and possible complications

Possible effects include:

Some drugs can affect the heart, lungs, kidneys, liver, hearing, or bladder. Your team may monitor these organs.

Less common complications include a serious allergic reaction or IV medicine leaking into nearby tissue. Some treatments can cause lasting organ or nerve damage, and a small number are linked to a later second cancer.

Side effects do not show whether treatment is working. Report them promptly; supportive medicines or treatment changes may reduce harm.

- Nausea, vomiting, appetite changes, diarrhoea, or constipation
- Fatigue, mouth sores, skin changes, or hair loss
- Low white blood cells, increasing infection risk
- Low platelets, increasing bruising or bleeding
- Low red blood cells, causing tiredness or breathlessness
- Numbness, tingling, pain, or weakness from nerve damage
- Effects on fertility or menstrual function

Results and follow up

Response is assessed over time through symptoms, examination, blood tests, tumour markers when useful, and scans such as CT, MRI, or PET.

Results may show that cancer has disappeared, shrunk, remained stable, or grown. A complete response does not always mean every cancer cell is gone, while stable cancer may be worthwhile when the goal is control.

Follow-up usually occurs before each cycle and at planned assessment points. Treatment may continue, pause, change, or stop based on response, side effects, blood counts, and your preferences.

Alternatives

Alternatives depend on the cancer:

These treatments may be used with chemotherapy rather than instead of it. Ask about the likely outcome of each option, including no cancer-directed treatment.

- Surgery removes a local tumour but may not treat unseen cancer elsewhere
- Radiation therapy targets a defined area
- Targeted therapy treats cancers with suitable molecular features
- Immunotherapy helps the immune system attack cancer
- Hormone therapy treats hormone-sensitive cancers
- Active surveillance delays treatment while closely monitoring the cancer
- Supportive or palliative care alone focuses on comfort and quality of life

When to call your healthcare team

Contact your cancer team urgently for:

Call emergency services for severe breathing difficulty, swelling of the face or throat, chest pain, fainting, uncontrolled bleeding, a seizure, or difficulty waking.

Milder expected effects can usually be discussed through the routine advice line or at your next review. Do not wait if symptoms are rapidly worsening.

- A fever at or above the threshold they gave you, often 38°C or 100.4°F
- Shaking chills, new confusion, or feeling suddenly very unwell
- Repeated vomiting, severe diarrhoea, or inability to keep fluids down
- New bleeding, unusual bruising, or blood in urine or stool
- Redness, swelling, leakage, or increasing pain around an IV or central line
- New or worsening numbness, weakness, mouth sores, or reduced urination

Common questions

Will I be asleep?

Usually not. Chemotherapy does not normally require anaesthesia, although premedicines may make you sleepy. Local numbing medicine may be used for central line placement.

Can I drive home?

Sometimes, but not if you are sleepy, dizzy, weak, or receiving medicine that affects alertness. Follow your centre's transport instructions.

How painful is chemotherapy?

The infusion is usually not painful beyond needle placement. Report burning, swelling, or pain at the IV site immediately.

When will I know if it is working?

Your team usually assesses response after a planned number of cycles using symptoms, blood tests, and scans.

How many rounds will I need?

Treatment length depends on the cancer, goal, regimen, response, and side effects. The plan may change as results become available.

Will I lose my hair?

Not all chemotherapy causes hair loss. The likelihood, timing, and amount depend on the drugs and doses used.

Sources

- National Cancer Institute. Chemotherapy to Treat Cancer
- National Cancer Institute. Chemotherapy and You: Support for People With Cancer
- National Cancer Institute. Side Effects of Cancer Treatment
- NHS. Chemotherapy
- American Cancer Society. How Chemotherapy Is Used to Treat Cancer
- Cancer.Net, American Society of Clinical Oncology. Understanding Chemotherapy