

# FEC chemotherapy

breast  
cancer  
care

This booklet explains what the chemotherapy combination FEC is, how and when it may be given, and the side effects it can cause. You may like to read it alongside our **Chemotherapy for breast cancer** booklet.





## **This information is by Breast Cancer Care.**

**We are the only specialist UK-wide charity that supports people affected by breast cancer. We've been supporting them, their family and friends and campaigning on their behalf since 1973.**

Today, we continue to offer reliable information and personal support, over the phone and online, from nurses and people who've been there. We also offer local support across the UK.

From the moment you notice something isn't right, through to treatment and beyond, we're here to help you feel more in control.

For breast cancer care, support and information, call us free on **0808 800 6000** or visit **[breastcancercare.org.uk](https://breastcancercare.org.uk)**



## What is FEC?

Chemotherapy is a treatment that uses anti-cancer drugs to destroy cancer cells. FEC is a combination of three chemotherapy drugs:

- 5 fluorouracil (also known as 5FU)
- epirubicin
- cyclophosphamide

FEC takes its name from the initials of these drugs.

## How does FEC work?

FEC destroys cancer cells by interfering with their ability to divide and grow.

Normal cells in your body divide and grow all the time in an ordered and controlled way. However, cancer cells divide and grow in a disordered and uncontrolled way.

Different chemotherapy drugs work in different ways and interfere with the cancer cells at different times in their growth cycle. This is why a combination of drugs is often used.

Chemotherapy affects cells throughout the body.

## When might FEC be given?

FEC can be used to treat primary breast cancer. Primary breast cancer is breast cancer that has not spread beyond the breast or lymph nodes (glands) under the arm. It may be given before or after surgery.

### After surgery

FEC is given after surgery to reduce the risk of breast cancer coming back in the future. It usually starts within a few weeks of your operation. If you are going to have radiotherapy you will usually complete your course of FEC first.

When chemotherapy is given after surgery it is called adjuvant therapy.

## Before surgery

FEC may be given before surgery to shrink a larger breast cancer. This may mean breast-conserving surgery is an option, rather than a mastectomy. Or it might be given before surgery to slow down the growth of a rapidly growing breast cancer and reduce the chance of it spreading to other parts of the body.

When chemotherapy is given before surgery it's called primary or neo-adjuvant chemotherapy.

## Secondary breast cancer

FEC may also be given to people with secondary breast cancer – breast cancer that has spread to other parts of the body. See our [Secondary breast cancer information pack](#) for more information.

## Before you start chemotherapy

Before starting your treatment most hospitals will arrange a chemotherapy information session. At this appointment a member of your treatment team will discuss how and when your chemotherapy will be given and how side effects can be managed.

You will have blood tests and your height and weight will also be measured.

You may also have tests to check your heart function, such as:

- an ECG (electrocardiogram), a simple test that checks your heart rhythm
- an echocardiogram (an ultrasound scan of the heart)
- a MUGA scan (an injection and scan)

Contact numbers will be given so you know who to phone if you have any questions or concerns.

## How is FEC given?

The drugs are usually given as a drip into a vein (intravenously).

There are various ways that intravenous chemotherapy can be given depending on factors such as how easy it is for chemotherapy staff to find suitable veins, and your preferences. For more information about the different ways chemotherapy can be given, see our **Chemotherapy for breast cancer** booklet.

## How long does treatment take?

It normally takes about an hour for the drugs to be given although you are likely to be at the hospital for longer than this.

The treatment is repeated every three weeks. The break between each treatment gives your body time to recover from any short-term side effects. It may vary depending on whether the number of blood cells has returned to normal (see page 7).

The treatment and period of time before the next one starts is known as a cycle.

You will usually have six cycles of treatments as an outpatient. The total length of your treatment is usually three to four months.

## Side effects of FEC

Like any treatment, FEC can cause side effects. Everyone reacts differently to drugs and some people have more side effects than others. These can usually be controlled and those described here will not affect everyone.

If you're worried about any side effects, regardless of whether they are listed here, talk to your chemotherapy nurse or treatment team.

Before starting chemotherapy you should be given a 24-hour contact number or told who to contact if you feel unwell at any time during your treatment, including at night or at the weekends.

For more information about the side effects of chemotherapy, see our **Chemotherapy for breast cancer** booklet.

## Common side effects

### Effects on the blood

FEC chemotherapy can temporarily affect the number of healthy blood cells in the body. Blood cells (white blood cells, red blood cells and platelets) are released by the bone marrow (the spongy material found in the hollow part of bones) to replace those which are naturally used up in the body. Chemotherapy reduces the ability of the bone marrow to make these cells.

You will have regular blood tests throughout your treatment to check your blood count. If the number of blood cells is too low, your next course of treatment may be delayed or the dose of the chemotherapy reduced.

### Risk of infection

When the white blood cells fall below a certain level, it's known as neutropenia. Not having enough white blood cells can increase the risk of getting an infection. Your resistance to infection is usually at its lowest point around 7–14 days after the FEC has been given. The number of white blood cells usually returns to normal before your next course of chemotherapy is due.

### Contact your hospital immediately if:

- you have a high temperature (over 37.5°C) or low temperature (under 36°C), or whatever your chemotherapy team has advised
- you suddenly feel unwell, even with a normal temperature
- you have any symptoms of an infection, for example a sore throat, a cough, a need to pass urine frequently or feeling cold and/or shivery

You may need antibiotics. Sometimes your doctor may recommend injections of drugs called growth factors to stimulate the production of white blood cells to reduce your risk of infection.

### Anaemia

Having too few red blood cells is called anaemia. If you feel particularly tired, breathless or dizzy, let your treatment team know. A blood transfusion may be necessary during your treatment if the number of red blood cells falls significantly.

## **Bruising and bleeding**

FEC can reduce the number of platelets, which help the blood to clot. You may bruise more easily, have nosebleeds or your gums may bleed when you brush your teeth. Tell your treatment team if you have any of these symptoms.

## **Nausea and vomiting**

You may experience nausea (feeling sick) and vomiting (being sick), but this can usually be controlled. You'll be given anti-sickness medication by mouth or intravenously before each cycle of chemotherapy is given, as well as some anti-sickness drugs to take home.

If nausea or sickness are affecting you, tell someone in your treatment team as they may be able to change your anti-sickness drugs.

## **Diarrhoea or constipation**

You may have diarrhoea or constipation. Your chemotherapy team can prescribe medicine to help and can give you information about diet.

Contact your chemotherapy team if you have four or more episodes of diarrhoea within a 24-hour period.

## **Hair loss (alopecia)**

Most people having FEC will lose all their hair, including eyebrows, eyelashes and body hair.

You may begin to lose your hair about two weeks after the first treatment, but it can happen earlier. Although hair loss is usually gradual, for some people it's much quicker, possibly happening over a couple of days.

Cooling the scalp can sometimes help minimise hair loss. This involves wearing a 'cold cap' before, during and for one to two hours after your treatment with chemotherapy drugs. How well the cold cap works depends on the drugs and doses used, but it doesn't work for everyone.

Hair loss should be temporary and in most cases your hair will begin to grow back a few weeks after your treatment has ended. For more information about hair loss, see our **Breast cancer and hair loss** booklet.

## **Fatigue (extreme tiredness)**

Fatigue is extreme tiredness and exhaustion that doesn't go away with rest or sleep. It can affect you physically and emotionally. It's a very common side effect of FEC and may last for weeks or months after your treatment has finished. Occasionally fatigue is a long-term effect.

Fatigue can also be caused by conditions such as anaemia (low number of red blood cells). It's important to let your team know if you're affected by fatigue to rule out other conditions.

Fatigue affects people in different ways and there are a number of ways of coping with and managing it – your treatment team may be able to help you with this. You can find lots more information on our website or by calling our Helpline on **0808 800 6000**. Macmillan Cancer Support produces a booklet called Coping with fatigue.

## **Pain in the injection site**

Tell the nurse giving the chemotherapy immediately if you have pain, stinging or a burning sensation around the cannula (small plastic tube) while the drug is being given. If epirubicin leaks out of the vein it's being given in (called extravasation), it can damage the surrounding tissue.

After treatment, you may experience pain where the needle was inserted, or along the vein. After a few weeks you may notice tenderness, darkening and hardening around where the needle was inserted. This should fade over time.

## **Change in the colour of urine**

You may notice your urine is red or pink when you go to the toilet. This is because epirubicin is red and it's being passed through your kidneys and bladder. This can last for one to two days after treatment.

## **Bladder irritation**

Chemotherapy drugs and cyclophosphamide in particular can irritate the lining of the bladder. It's important to drink plenty of fluids around the time you have your treatment, and to empty your bladder regularly and as soon as you feel the need to.

Tell your treatment team if you notice any irritation or a burning/stinging sensation when passing urine.

## Sore mouth and dental problems

You'll be given mouthwash to try to reduce soreness in the mouth and gums and to stop mouth ulcers developing. Good mouth hygiene is very important during treatment.

See your dentist for a check-up before chemotherapy begins. If you need any dental work speak to your treatment team about the best time to have this.

For more information on coping with a sore mouth see our booklet **Chemotherapy for breast cancer**.

## Taste changes

While you're having FEC your taste can change. Some food may taste different, for example more salty, bitter or metallic. You may no longer enjoy some foods you used to enjoy. Your taste should return to normal once your treatment has finished, although for some people taste changes can last after treatment.

See our booklet **Diet and breast cancer** for more information on dealing with changes to your taste and appetite during treatment.

## Loss of appetite

You may lose your appetite while having FEC. Talk to your specialist or breast care nurse about this. They will give you advice and information to help deal with loss of appetite and may refer you to a dietitian if needed.

## Effects on your concentration (cognitive impairment)

Some people find treatment affects their ability to concentrate and makes them more forgetful. This is sometimes referred to as 'chemo brain' or 'chemo fog', but is more commonly known as cognitive impairment. It usually improves over time after treatment has finished. We have more information on our website about this.

## Menopausal symptoms

Some women have menopausal symptoms. This is because FEC chemotherapy affects the ovaries, which produce oestrogen.

If you have not yet reached the menopause, your periods may stop or become irregular during chemotherapy. Whether your periods return will depend on the type of drugs used, the dose given and your age.

Other common menopausal symptoms can include:

- hot flushes
- night sweats
- mood changes
- joint aches and pains
- vaginal dryness

You can talk to your breast care nurse or treatment team about ways of coping with any of these symptoms.

For information on how to cope with these side effects, see our [Menopausal symptoms and breast cancer](#) booklet.

### Effects on fertility

FEC chemotherapy causes changes in the ovaries, which can affect your ability to become pregnant. The likelihood of you becoming infertile also depends on whether you have had chemotherapy in the past and your age. Many women stop having periods (known as amenorrhoea) during chemotherapy, but this may be temporary.

Women aged around 40 and above are less likely to have their periods return after completing chemotherapy than women under this age.

In men, FEC chemotherapy can affect sperm production, which can lead to temporary or permanent infertility.

It's important to discuss any fertility concerns with your treatment team before you begin your treatment. Your treatment team should offer you a referral to a fertility specialist to discuss the possibility of preserving your fertility.

For more information, see our [Fertility and breast cancer treatment](#) booklet.

### Hand-foot syndrome (Palmar-plantar syndrome)

You may develop soreness and/or redness on the palms of your hands and soles of your feet. This is called Palmar-plantar or hand-foot syndrome. Your doctor may prescribe creams to try to help with this.

## Less common side effects

### Heart changes

Epirubicin and 5FU can cause changes to the way the heart works. This is usually temporary but for a small number of people it may be permanent. You may have tests to check how well your heart is working before, during and after your treatment.

Heart problems as a result of epirubicin are not common. However, because of the potential risk, before you start chemotherapy your specialist may arrange a heart (cardiac) function test. This could be an electrocardiogram (ECG), which takes an electrical recording of your heart, or an echocardiogram (echo) to make sure your heart is working normally.

You may also be offered a multiple-gated acquisition (MUGA) scan to check how well the heart is pumping.

If you have pain or tightness in your chest or feel breathless or notice changes to your heartbeat at any time during or after treatment, tell a doctor straight away. These symptoms can be caused by other conditions but it's important to get them checked by a doctor.

### Sore eyes and runny nose

FEC chemotherapy can cause a runny nose. It can also cause soreness and a gritty feeling in your eyes, or your eyes may water. Eye drops may be prescribed to relieve the soreness.

### Headaches

FEC can cause headaches. These are usually mild and can be relieved with simple pain relief such as paracetamol. If your headache is severe, speak to a member of your treatment team.

### Skin changes

FEC can make your skin dry, more sensitive or prone to reactions.

If you develop a rash tell your treatment team as soon as possible.

Your skin may be more sensitive to the sun, so use a high factor sun cream.

## Nail changes

Chemotherapy may cause changes to the appearance of your nails. This can be a change in the nail colour or texture, such as ridges forming. Nails can become more brittle and cracked. Occasionally the nail may lift off the nail bed and fall out.

As you're more at risk of infection while having chemotherapy, it's important to report any signs of infection such as redness, heat, swelling or pain in or under your fingernails and toenails.

## Rare side effects

### Allergic reaction

If you have an allergic reaction to FEC, it will probably happen within the first few minutes of your treatment and most likely the first or second time you have the drug. Reactions can vary from mild to severe, but severe reactions are uncommon. You will be monitored closely during your treatment so that any reaction can be dealt with immediately.

Symptoms of an allergic reaction include flushing, skin rash, itching, back pain, shortness of breath, faintness, fever or chills.

If you have a severe reaction, treatment will be stopped immediately. If you have a reaction, medication can be given before future treatments to reduce the risk of further reactions.

### Liver or kidney changes

FEC can cause changes to the way the kidneys or liver work. Changes are usually minimal and go back to normal when treatment is finished. You'll have regular blood tests to monitor your liver and kidneys throughout your chemotherapy.

## Blood clots

People with breast cancer have a higher risk of blood clots. Their risk is higher because of the cancer itself and some treatments for breast cancer. If the cancer has spread to other parts of the body (secondary breast cancer), this also increases the risk.

Having FEC chemotherapy increases the risk of blood clots such as deep vein thrombosis (DVT). People with a DVT are at risk of developing a pulmonary embolism. This is when part of the blood clot breaks away and travels to the lung.

Blood clots can be harmful but are treatable so it's important to report symptoms as soon as possible.

If you have any of the following symptoms contact your local A&E department, GP or treatment team straight away:

- pain, redness or discolouration, heat and swelling of the calf, leg or thigh
- swelling, redness or tenderness where a central line is inserted to give chemotherapy, for example in the arm, chest area or up into the neck
- shortness of breath
- tightness in the chest
- unexplained cough (may cough up blood)

## Sex, contraception and pregnancy

You're advised not to become pregnant while having treatment because FEC can harm a developing baby. If you haven't been through the menopause, talk to your team about the most suitable method of birth control for you. It's still possible to become pregnant even if your periods become irregular or stop completely.

You can still have sex during treatment. It's thought that chemotherapy drugs can't pass into vaginal fluids or semen, but this can't be completely ruled out as chemotherapy drugs can pass into the blood and some other body fluids. For the first few days after chemotherapy, you may want to avoid unprotected intercourse, oral sex, or any contact that involves the sharing of body fluids to ensure that your partner is not exposed to the chemotherapy drugs. Most hospital specialists will advise using barrier methods of contraception, such as condoms, for a few days after chemotherapy is given.

Chemotherapy will almost certainly affect how you feel about sex and intimacy. You may not feel like being intimate when you're dealing with treatment, or you may find intimacy helps you feel more normal. Everyone's reaction will be different. There's more information about how breast cancer and treatment can affect intimacy on our website.

## Travel and vaccinations

If you're planning a holiday or need to travel overseas, check with your treatment team first.

You shouldn't have any live vaccines while you're having chemotherapy. Live vaccines include measles, rubella (German measles), polio, BCG (tuberculosis), shingles and yellow fever.

Live vaccines contain a small amount of live virus or bacteria. If you have a weakened immune system, which you may do during chemotherapy, they could be harmful. It's safe to have these vaccinations six months after your treatment finishes.

Talk to your GP or treatment team before having any vaccinations.

If someone you live with needs to have a live vaccine speak to your treatment team or GP. They can advise what precautions you may need to take depending on the vaccination.

### Flu vaccination

Anyone at risk of a weakened immune system, and therefore more prone to infection, should have the flu vaccine. This includes people due to have or already having chemotherapy. The flu vaccine is not a live vaccine so doesn't contain any active viruses. If you're already having chemotherapy, talk to your chemotherapy team or breast care nurse about the best time to have your flu jab.

## Four ways to get support

We hope this information was helpful, but if you have questions, want to talk to someone or read more about breast cancer, here's how you can.



Speak to our nurses or trained experts. Call our free Helpline on **0808 800 6000** (Monday to Friday 9am–4pm and Saturday 9am–1pm). The Helpline can also put you in touch with someone who knows what it's like to have breast cancer.



Chat to other women who understand what you're going through in our friendly community, for support day and night. Look around, share, ask a question or support others at **[forum.breastcancercare.org.uk](https://forum.breastcancercare.org.uk)**



Find trusted information you might need to understand your situation and take control of your diagnosis or order information booklets at **[breastcancercare.org.uk](https://breastcancercare.org.uk)**



See what support we have in your local area. We'll give you the chance to find out more about treatments and side effects as well as meet other people like you. Visit **[breastcancercare.org.uk/in-your-area](https://breastcancercare.org.uk/in-your-area)**

# We're here for you: help us to be there for other people too

If you found this booklet helpful, please use this form to send us a donation. Our information resources and other services are only free because of support from people such as you.

Donate today and together we can ensure that everyone affected by breast cancer has someone to turn to.

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Please accept my donation of **£10/£20/my own choice of £**

I enclose a cheque/PO/CAF voucher made payable to **Breast Cancer Care**

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In addition, we'd love to keep you updated about our work and provide you with other opportunities to get involved with Breast Cancer Care. Please tell us how you would like to hear from us (by ticking these boxes you confirm you are 18 or over)

- I'd like to hear from you by email
- I'd like to hear from you by text message or SMS
- Please do not contact me by post
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**Please return this form to Breast Cancer Care, Freepost RRRKZ-ARZY-YCKG, Chester House, 1-3 Brixton Road, London SW9 6DE**

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# About this booklet

**FEC chemotherapy** was written by Breast Cancer Care's clinical specialists, and reviewed by healthcare professionals and people affected by breast cancer.



For a full list of the sources we used to research it:

Phone **0345 092 0808**

Email **[publications@breastcancercare.org.uk](mailto:publications@breastcancercare.org.uk)**



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When you have breast cancer, everything changes. At Breast Cancer Care, we understand the emotions, challenges and decisions you face every day, and we know that everyone's experience is different.

For breast cancer care, support and information, call us free on **0808 800 6000** or visit **[breastcancercare.org.uk](https://breastcancercare.org.uk)**

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