

# FEC chemotherapy

This booklet explains what the chemotherapy combination FEC is, when it may be prescribed, how it works and what side effects may occur.

## What is FEC?

Chemotherapy is a treatment that uses anti-cancer (also called cytotoxic) drugs which aims 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.

Before you start your treatment, many hospitals will arrange a chemotherapy information session. At this appointment a nurse will discuss how and when your chemotherapy will be given and how side effects can be managed. Contact numbers will also be given so you know who to phone if you have any questions or concerns.

## Who might be offered FEC?

Chemotherapy is commonly given to reduce the risk of the breast cancer returning. FEC is used to treat primary breast cancer – breast cancer that has not spread beyond the breast or the lymph nodes (glands) under the arm. It can be used in combination with other anti-cancer drugs.

FEC is usually given a few weeks after surgery, known as adjuvant (additional) therapy. If you are going to have radiotherapy or hormone therapy, you will complete your course of FEC first.

Sometimes, FEC may be given before surgery. This is known as primary or neo-adjuvant chemotherapy.

It 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 resource pack** for more information.

## How does FEC work?

Chemotherapy drugs interfere with how cancer cells develop and grow, and different drugs do this in different ways. FEC works by stopping the cancer cells from dividing and multiplying, which blocks the growth of the cancer. Different chemotherapy drugs attack the cancer cells at different phases of their growth. This is why a combination of drugs is often used instead of one single drug.

## How is FEC given?

The drugs are usually given as a drip into a vein (intravenously) in the hand or arm.

FEC is normally given for around one hour every three weeks. Although it only takes about an hour, you are likely to be at the hospital for longer than this. You will usually have six treatments as an outpatient. The total length of your treatment is usually three to four months.

The interval between each course of treatment gives your body time to recover, and may vary depending on whether the number of blood cells has returned to normal between each cycle (see page 4).

Sometimes, if it's difficult to find a suitable vein, another device is used. You may have a PICC (peripherally inserted central catheter) line inserted into a vein in your arm, which extends into the large vein leading to your heart.

Alternatively, you may have a skin-tunnelled catheter, which is like a fine silicone tube inserted into a vein through a small cut in the chest wall (Hickman line or Groshong). This is the way chemotherapy will probably be given if you've had surgery to both breasts.

The other option is an implanted port (portacath) inserted under the skin, usually on the chest or in the arm. These can all stay in place until your treatment is complete.

For more information about the different ways chemotherapy can be given, see our **Chemotherapy for breast cancer** booklet.

## What are the possible side effects of FEC?

Like any treatment, FEC chemotherapy can cause side effects. Everyone reacts differently to drugs and some people have more side effects than others. These side effects can usually be controlled and those described here will not affect everyone. If you are concerned about any side effects, regardless of whether they are listed here, talk to your chemotherapy nurse or cancer specialist (oncologist).

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

### Effects on the blood

FEC 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 chemotherapy reduced.

### Risk of infection

Not having enough white blood cells can increase the risk of getting an infection. Your resistance to infection is at its lowest point around 7–14 days after the FEC chemotherapy has been given. The number of white blood cells usually returns to normal before your next course of chemotherapy is due. When the white blood cells fall below a certain level, it is known as neutropenia. If you also have a high temperature (above 38°C), it's known as febrile neutropenia.

**If you feel unwell, develop a sore throat or shivering or have a temperature above 38°C at any time during your treatment, you should contact the hospital immediately, even if this happens at the weekend or during the night.**

Before starting chemotherapy, you should be given a 24-hour contact number or told where to get emergency care by your specialist team. You may need antibiotics. Sometimes, your doctor may recommend injections of drugs called growth factors to stimulate the production of white blood cells and reduce your risk of further infections.

## Anaemia

Having too few red blood cells is called anaemia. If you feel particularly tired, breathless or dizzy, you should let your specialist team know. A blood transfusion may be necessary during your treatment.

## 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 specialist team if you have any of these symptoms.

## Hair loss (alopecia)

FEC causes hair loss. Most people 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. Hair loss might be minimised by scalp cooling. 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.

## Nausea and vomiting

You may experience nausea (feeling sick) and vomiting (being sick), but many people will not actually be sick. You will be given anti-sickness medication into your vein before the chemotherapy is given, and you will be prescribed anti-sickness drugs to take home to reduce nausea or stop it happening. If nausea or sickness is not controlled, tell your chemotherapy nurse or doctor as they may be able to change your anti-sickness drugs.

For more information about nausea and vomiting, see our **Chemotherapy for breast cancer** booklet.

## Diarrhoea or constipation

You may have diarrhoea or constipation but your specialist or GP can prescribe medicine to help control it. Contact your specialist chemotherapy team if you have four or more episodes of diarrhoea within a 24-hour period.

## Sore mouth and taste changes

You'll be given mouthwash to try to reduce soreness of the mouth and gums and to try to stop mouth ulcers developing. Good mouth hygiene is very important during treatment. It's advisable to see your dentist for a dental check-up before chemotherapy begins, but avoid dental treatment during chemotherapy.

While you're having FEC your taste can change and some food may taste different (for example more salty, bitter or metallic).

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

## Pain in the injection site

If FEC leaks out of the vein it's being given in (called extravasation), it can damage the surrounding soft tissue. Because of this, it's important to tell the nurse giving the chemotherapy immediately if you experience pain, stinging or a burning sensation around the cannula (small plastic tube) while the drug is being given.

After treatment, pain can occur where the needle has been 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 in time.

## Tiredness (fatigue)

It's common to feel extremely tired during your treatment. For some people, fatigue can last for several weeks or even months after the treatment has finished, but your energy levels will gradually return. There are different ways of coping with and managing fatigue. Speak to your specialist team or contact Breast Cancer Care on **0808 800 6000** for more information and support.

## Change in the colour of urine

Epirubicin is red. You may notice when you go to the toilet that your urine is red or pink. This is not blood but the epirubicin being passed through your kidneys and bladder. This can last for one to two days after treatment.

## Bladder irritation

It's important to drink plenty of fluids around the time you have your treatment because chemotherapy drugs (particularly cyclophosphamide) can irritate the lining of the bladder. Try to empty your bladder regularly, as soon as you feel the urge. Tell your specialist if you notice any irritation or a burning/stinging sensation when passing urine.

## Effects on your concentration

Your ability to concentrate or think clearly can also be affected, which can be very frustrating. This is sometimes referred to as 'chemo-brain' or 'chemo-fog' and usually improves over time after treatment has finished.

## Effects on fertility

FEC chemotherapy causes changes in the ovaries, which may lead to infertility in women who haven't been through the menopause. The likelihood of you becoming infertile may also depend on whether you have had chemotherapy in the past and your age.

Some 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.

If you're concerned about your fertility, it's important to talk to your specialist team before treatment begins. For more information about possible ways to preserve fertility before treatment as well as fertility and pregnancy after treatment, see our **Fertility and breast cancer treatment** booklet.

## Menopausal symptoms

Sometimes FEC can cause women who haven't been through the menopause (pre-menopausal) to experience menopausal symptoms. This is because it affects their ovaries, which produce oestrogen. Common symptoms can include hot flushes and night sweats, mood changes, joint aches and pains, and vaginal dryness.

Your periods can also be affected. These may stop completely but start again once treatment finishes. For some women, periods may not return.

For information on how to cope with these side effects, see our **Menopausal symptoms and breast cancer** booklet.

## Less common side effects

### 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 can be prescribed to relieve the soreness.

### Skin reactions

You may develop a rash anywhere on your body, which can be itchy. You may also develop soreness and/or redness on the palms of your hands and soles of your feet (called palmar-plantar or hand-foot syndrome). Your doctor may prescribe vitamin B6 (pyridoxine) or a cream to try to help with this. Your skin can also become dry and flaky or peel – particularly on your hands and feet – but this will improve after the treatment finishes. Using a glycerine-based moisturising cream may help.

If you experience skin reactions, mention this to your specialist team so they can monitor the symptoms.

During treatment with FEC and for several months afterwards, your skin will be more sensitive. You will be more likely to get sunburnt, so it's important to wear sunscreen with a high sun protection factor (SPF) if you're out in the sun.

### Nail changes

Your fingernails and toenails may become darker and ridges may form. However, this is uncommon and will grow out over the months following the end of your treatment.

## Heart changes

The chemotherapy drug epirubicin may cause heart changes by weakening the heart muscle. This is usually temporary but for a small number of people it may be permanent. 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.

## Allergic reaction

If you have an allergic reaction to FEC, it will probably happen within the first few minutes of your treatment and is 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.

## Blood clots

Chemotherapy can increase your risk of blood clots. Tell your doctor straight away if you have any swelling, pain or redness in your leg, shortness of breath or chest pains.

## Liver or kidney changes

FEC can cause irritation to the kidneys or liver. You'll have regular blood tests to monitor your liver and kidneys throughout your chemotherapy. Any irritation is usually mild and gets better by itself.

## Sex and contraception

You're advised not to become pregnant while having treatment because FEC may have a harmful effect on 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.

You can still have sex during treatment. It's not known if chemotherapy drugs can pass into vaginal fluids (or semen). Most hospital specialists will advise using barrier methods of contraception, such as condoms, for a few days after chemotherapy is given.

## Travel and vaccinations

You may be planning to travel abroad during or soon after treatment. If you require travel vaccinations, be aware that vaccines may be less effective if given during treatment, and that live vaccines can cause serious infections.

You should not have any live vaccines while you're having chemotherapy as they could be harmful. It's usually safe to have these vaccinations six months after your treatment finishes. These include vaccines that protect against measles, rubella, yellow fever and typhoid.

If you are planning a trip and need vaccinations, discuss this with your specialist team.

### Flu vaccination

Anyone with a reduced immunity to infection should have a flu vaccine. This includes people having or due to have chemotherapy. The flu vaccine is not a live vaccine, which means there are no active viruses in it. It's best to have the vaccination at least two weeks before your chemotherapy starts. If you're already receiving chemotherapy, talk to your chemotherapy specialist or breast care nurse about the best time to have your flu jab to ensure you gain the greatest possible effect from the vaccine. This will usually be at a point in your chemotherapy cycle when your white blood cell count is recovering.





# Helping you face breast cancer

Treatments for breast cancer can be complex and if you're wondering where to turn for support in making treatment decisions or coping with side effects, we can help with practical and emotional support.

## Ask us

Our free Helpline is answered by specialist nurses and trained staff with personal experience of breast cancer. They understand your issues and can answer questions. Or you can Ask the Nurse by email on our website.

Free Helpline **0808 800 6000** (Text Relay 18001)  
Monday–Friday 9am–5pm, Saturday 10am–2pm  
[www.breastcancercare.org.uk/ATN](http://www.breastcancercare.org.uk/ATN)

## Talk to someone who understands

Our Someone Like Me service puts you in contact by phone or email with someone else who's had breast cancer and who's been trained to help.

Online, you can chat to other people going through breast cancer on our professionally moderated discussion Forum.

## In your area

We provide a variety of services in person across the UK, including:

HeadStrong prepares you for the possibility of losing your hair because of cancer treatment. In a private meeting, trained volunteers talk with you about how to look after your scalp before, during and after treatment. They'll also share ideas on how to make the most of scarves, hats and other headwear.

Moving Forward Information Sessions and longer courses on adjusting to life after treatment. Both have expert speakers and offer the chance to talk to other people in the same situation as you.

Find out about all our services for people affected by breast cancer at [www.breastcancercare.org.uk/services](http://www.breastcancercare.org.uk/services) or phone the Helpline. We can help you decide which of our services are right for you.

# 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.

We want to be there for every person facing the emotional and physical trauma of a breast cancer diagnosis. Donate today and together we can ensure that everyone affected by breast cancer has someone to turn to.

## Donate by post

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

I enclose a cheque/PO/CAF voucher made payable to  
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You can give using a debit or credit card at  
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## My details

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Postcode \_\_\_\_\_

Email address \_\_\_\_\_

We might occasionally want to send you more information about our services and activities

- Please tick if you're happy to receive email from us
- Please tick if you don't want to receive post from us

We won't pass on your details to any other organisation or third parties.

Please return this form to Breast Cancer Care, Freepost RRRKZ-ARZY-YCKG,  
5-13 Great Suffolk Street, London SE1 0NS



# 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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the breast cancer  
support charity

Breast Cancer Care is the only UK-wide charity providing specialist support and tailored information for anyone affected by breast cancer.

Our clinical expertise and emotional support network help thousands of people find a way to live with, through and beyond breast cancer.

Visit [www.breastcancercare.org.uk](http://www.breastcancercare.org.uk) or call us free on **0808 800 6000** (Text Relay 18001).

### Central Office

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