This information is about a chemotherapy treatment for bowel cancer using irinotecan with fluorouracil and folinic acid. It describes the drugs used, how they are given and some of the possible side effects. The information should ideally be read with our general information about chemotherapy and about colon or rectal cancer.

We hope this fact sheet answers any questions you may have. If you have any further questions you can ask your doctor, chemotherapy nurse or pharmacist at the hospital where you are having treatment.

You may also want to discuss this information with one of our cancer support specialists on freephone 0808 808 00 00 (open Monday–Friday 9am–8pm). Alternatively visit macmillan.org.uk If you're hard of hearing you can use textphone 0808 808 0121, or Text Relay. For non English speakers, interpreters are available.

The drugs that are used

This treatment involves the chemotherapy drugs irinotecan and fluorouracil (also known as 5FU), and a drug called folinic acid (also known as leucovorin). Folinic acid makes 5FU more effective.

5FU and folinic acid are commonly given together to treat bowel cancer. The combination of these two drugs can be given in different ways, and is often known as the 'de Gramont' regime, or modified de Gramont. When irinotecan is given with de Gramont it is sometimes called FOLFIRI. When irinotecan is given with modified de Gramont, it may be called IrMdG.

How treatment is given

Irinotecan with 5FU and folinic acid treatment can usually be given to you during a short stay in hospital or as a day patient. Before you start treatment you will need to have a blood test – either on the same day or a few days beforehand.
You will also be seen by a doctor, specialist nurse or pharmacist. If the results of your blood test are normal, the pharmacy will prepare your chemotherapy drugs. All of this may take a couple of hours.

The nurse will put a thin, flexible tube (cannula) into a vein in your hand or arm. You may find this uncomfortable or a little painful, but it shouldn’t take long. Some people have their chemotherapy given through a thin plastic tube that is inserted under the skin into a vein near the collarbone (central line) or passed through a vein in the crook of their arm (PICC line). A central or PICC line will almost certainly be needed for people having treatment as outpatients. Your doctor or nurse will explain more about this to you.

You will be given an anti-sickness (anti-emetic) drug. This will usually be given by injection through the cannula or through your central or PICC line, but some anti-sickness drugs can be taken as tablets.

The chemotherapy drugs are then given separately:

• irinotecan (a clear, slightly yellow fluid) and folinic acid are given as drips (infusions)
• 5FU (a colourless fluid) is given as an injection into your cannula or central line.

After this, you will be given an infusion of 5FU. The infusion lasts between 20–46 hours depending on which schedule you are having. This means that you will need to stay in hospital unless you have a central or PICC line, in which case the long 5FU infusion can be given to you through a small portable pump.

There are several different types of pump, but all are small enough to be carried on a belt or in a holster. Before you go home you should be given instructions on how to look after the pump. Your nurse should explain how to care for it and what to do if something goes wrong.

When the infusion is finished there may be some fluid left in the pump. This may be normal as some types of pump need to be overfilled to get the correct dose. You can check with your nurse or pharmacist whether you have this type of pump.

If you are having the treatment as an inpatient you can go home once the 5FU is finished. The cannula will be removed before you go. If you have a central or PICC line it will usually stay in place, ready for your next cycle of chemotherapy. You will be shown how to look after the line.

Before you go home you will be given a supply of anti-sickness drugs to take with you. It is important to take these regularly, as directed, even if you aren’t feeling sick. This is because some anti-sickness drugs are much better at preventing sickness than stopping it once it has started.

How often treatment is given

Your doctor may use the word ‘regimen’ (eg the FOLFIRI regimen) when talking about your chemotherapy. This means the whole plan or schedule of the particular chemotherapy treatment that you are receiving.

Irinotecan with 5FU and folinic acid can be given in different ways. The following are descriptions of two different schedules. You can ask your doctor or nurse to explain to you which one you are having.

Schedule A

On the first day of treatment you will be given an infusion of irinotecan over two hours, followed by an infusion of folinic acid again over two hours. Next you will be given an injection of 5FU into your cannula or line. This is followed by an infusion of 5FU that lasts for 20 hours.

On the second day the treatment will be repeated, but without irinotecan. If you are having treatment as an outpatient, you will return to the hospital for the second day of chemotherapy and to have your pump refilled. Your pump will be disconnected when your treatment is finished on the third day. After this, you will have a rest.
period, with no chemotherapy for 12 days. This completes what is called a cycle of the chemotherapy treatment. Each cycle takes 14 days (two weeks).

You will start the next cycle of your treatment after the rest period, which will be a fortnight after your first injection. The treatment is usually given for 12 cycles over a period of six months. This makes up a course of treatment.

**Schedule B**

On the first day of your treatment you will be given an infusion of irinotecan that lasts for 90 minutes. This is followed by a two-hour infusion of folinic acid and an injection of 5FU. Next, you will be given an infusion of 5FU over 46 hours. Once the infusion is finished, you can go home.

If you are having your treatment as an outpatient, you will need to have the pump disconnected. A district nurse may be able to disconnect the pump, or you may have to return to the hospital. After this, there is a rest period of 12 days. This completes one cycle of treatment. Each cycle lasts for 14 days (two weeks). After the rest period you will start the next cycle of treatment.

**Possible side effects**

Each person’s reaction to chemotherapy is different. Some people have very few side effects, others may experience more. The side effects described in this information won’t affect everyone who is having irinotecan with 5FU and folinic acid.

We have outlined the most common side effects and some of the less common ones, so that you can be aware of them if they occur. However, we haven’t included those that are rare and therefore unlikely to affect you. If you notice any effects that are not listed in this information, please discuss them with your doctor or nurse.

**Lowered resistance to infection** Irinotecan with 5FU and folinic acid can reduce the production of white blood cells by the bone marrow, making you more prone to infection. During the period when you aren't having chemotherapy your blood count will begin to recover and will usually have returned to normal before your next cycle of chemotherapy is due.

**Contact your doctor or the hospital straight away if:**

- your temperature goes above 38°C (100.5°F)
- you suddenly feel unwell (even with a normal temperature).

You will have a blood test before having more chemotherapy to make sure that the number of white blood cells has recovered. Occasionally, it may be necessary to delay treatment if the number of blood cells (blood count) is still low.

**Bruising or bleeding** Irinotecan with 5FU and folinic acid can reduce the production of platelets (which help the blood to clot and stop bleeding). Let your doctor know if you have any unexplained bruising or bleeding, such as nosebleeds, blood spots or rashes on the skin, or bleeding gums.

**Anaemia (low number of red blood cells)** While having this treatment you may become anaemic. This may make you feel tired and breathless. Let your doctor or nurse know if these effects are a problem.

**Feeling sick (nausea) and being sick (vomiting)** Your doctor can prescribe very effective anti-sickness (anti-emetic) drugs to prevent or reduce this. If the sickness isn't controlled or if it continues, tell your doctor, who can prescribe other anti-sickness drugs that may be more effective.

Some anti-sickness drugs can cause constipation. Let your doctor or nurse know if this is a problem.

**Tiredness** Many people feel extremely tired (fatigued) during chemotherapy, particularly towards the end of treatment. This is a very common side effect and it's important to try to get as much rest as you need.
Hair loss This usually starts 3–4 weeks after the first course of treatment and is due to the irinotecan. Hair usually falls out completely. You may also have thinning and loss of eyelashes, eyebrows and other body hair. This is temporary and your hair will start to grow again once the treatment is finished. Your nurse can give you advice about coping with hair loss.

Scalp cooling is a method of reducing hair loss that may be helpful for some people. You can ask your doctor or nurse if it is available at your hospital.

Sore mouth and ulcers Your mouth may become sore or dry, or you may notice small ulcers during this treatment. Drinking plenty of fluids and cleaning your teeth regularly and gently with a soft toothbrush can help to reduce the risk of this happening.

Tell your nurse or doctor if you have any of these problems, as special mouthwashes and medicines to prevent or clear any mouth infection can be prescribed.

Taste changes You may notice that food tastes different. Normal taste will usually come back after the treatment finishes.

Increased sweating, production of saliva, stomach cramps and diarrhoea This is a particular group of side effects that are known as acute cholinergic syndrome. They happen because irinotecan can cause the cells in the body to release too much of a chemical called acetylcholine. The side effects tend to occur during, or within the first 24 hours after, an infusion of irinotecan.

These symptoms can usually be prevented or controlled by a drug called atropine. The atropine is given as an injection under the skin (subcutaneously), which can be repeated if necessary.

Delayed diarrhoea If diarrhoea occurs as a delayed side effect (occurring more than 24 hours after an infusion) it can usually be easily controlled but may occasionally be severe.

If you get diarrhoea and abdominal cramps, start taking the anti-diarrhoea medicine (usually loperamide tablets or capsules) that you have been given. These should be taken exactly as you have been instructed by the hospital treating you, which may be different from the instructions provided on any printed leaflets from the manufacturer.

Normally your doctor will tell you to take two tablets or capsules when the diarrhoea starts, and then one every two hours until you haven’t had a loose bowel movement for 12 hours. If loperamide doesn’t work quickly (certainly if you still have diarrhoea after 48 hours) it is important that you contact the hospital. You may become dehydrated if you have diarrhoea a lot of times. In some situations you may be asked to take liquids to re-hydrate you, and replace any salts that you have lost. Antibiotics are also sometimes given if diarrhoea occurs.

Less common side effects

Skin changes Your skin may become itchy and dry. Your doctor can prescribe treatment to help to reduce this. Your skin may darken, but this will slowly return to normal a few months after the treatment has finished.

During treatment, and for several months afterwards, you will be more sensitive to the sun and your skin may burn more easily. You can still go out in the sun, but always wear a high protection-factor suncream and cover up with clothes.

Gritty eyes and blurred vision If this happens let your doctor know. They can prescribe some soothing eye drops.

Always let your doctor or nurse know about any side effects that you have. There are usually ways in which they can be controlled or improved.
Additional information

Risk of blood clots Cancer can increase your risk of developing a blood clot (thrombosis), and having chemotherapy may increase this risk further. A blood clot may cause symptoms such as pain, redness and swelling in a leg, or breathlessness and chest pain.

Blood clots can be very serious, so it is important to tell your doctor straight away if you have any of these symptoms. However, most clots can usually be successfully treated by using drugs which thin the blood. Your doctor or nurse can give you more information.

Other medicines Some other medicines, including those you can buy in a shop or chemist, can be harmful to take when you are having chemotherapy. Let your doctor know about any medicines you are taking, including over-the-counter drugs, complementary therapies and herbal drugs.

Fertility Your ability to become pregnant or father a child may be affected by this treatment. It’s important to discuss fertility with your doctor before starting treatment.

Contraception It’s not advisable to become pregnant or father a child while taking this treatment, as the developing foetus may be harmed. It is important to use effective contraception while taking these drugs, and for at least a few months afterwards. Again, discuss this with your doctor.

Loss of periods in women Due to the effect of chemotherapy on the ovaries you may find that your periods become irregular and may eventually stop. In some women this may be temporary but for some it may be permanent. If your periods stop permanently this will result in menopausal symptoms such as hot flushes and sweats.

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- Controlling nausea and vomiting
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- Scalp cooling
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This fact sheet has been written, revised and edited by Macmillan Cancer Support’s information development nurses and editorial team. It has been approved by our medical editor, Dr Terry Priestman, Consultant Clinical Oncologist.

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