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IRCCS Istituto in tecnologie avanzate e modelli assistenziali in oncologia

Information for patients

# Chemotherapy

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Dear Sir/Madam,

*This booklet is prepared to provide some useful information to those, like you, who have to undergo a course of chemotherapy.*

*The booklet contains answers to some frequently asked questions regarding*

- *chemotherapy;*
- *the way in which the treatments can affect aspects of daily life;*
- *the side effects of chemotherapy.*

***The information contained in this booklet is not meant to substitute the direct meeting with the physician and nurses who will accompany you through this course.***

*Use this booklet as a guideline for questions and answers. Please feel free to talk to your physician and the division nurses.*

## **CHEMOTHERAPY**

### **What is chemotherapy?**

Chemotherapy (*also called "chemo"*) is a medical treatment for malignant tumours.

Chemotherapy is not the same for everyone. The type of treatment differs according to the type of disease and the person's condition (*age, general physical conditions, etc.*).

Some types of chemotherapy involve the use of a single drug, but often combinations of different drugs are used.

The dosage of drugs differs from person to person, also depending on the height and weight.

### **How does chemotherapy work?**

Chemotherapy works by stopping or slowing down the growth of cancer cells. However, some healthy cells are also sensitive to the actions of drugs used for chemotherapy. These are primarily:

- *cells of the hair follicle (head and body hair);*
- *cells produced from the bone marrow (white blood cells, red blood cells and platelets, see page 20);*
- *cells of the inner lining (mucosa) of the mouth, oesophagus, stomach and intestine.*

The effect of the drugs on these healthy cells can cause certain problems, the so-called "side effects". The type and intensity of the side effects depend on the drugs used as well as the reaction of your body to the drugs. From page 11 on you can find a list of the most common side effects. You may have some of these problems, or none of these problems. Your physician will help you keep the side effects under control and limit these, if you have them.

Remember that the side effects almost always improve or disappear completely once the chemotherapy ends.

### **How is chemotherapy used?**

Sometimes, chemotherapy is used as the only cancer treatment. In other cases it may be used before, after or together with other treatments like surgery, radiation therapy, hormone therapy, biological therapy or immune therapy.

### **How is chemotherapy given?**

Chemotherapy may be given:

- directly into a vein (*intravenously*) by means of injections, drip-feed or using pumps for continuous infusion;
- orally in the form of tablets or capsules to be swallowed;
- by means of subcutaneous injections;
- by means of intramuscular injections;
- directly into the abdomen or chest (*intracavitary*).

Intravenous administration is used most of the time. Certain types of chemotherapy involve the simultaneous use of more than one of the methods described above.

### **Is it necessary to be hospitalised to have chemotherapy?**

Only in special circumstances. In most cases, chemotherapy can be provided in Day Hospital care ward.

Chemotherapy can also be administered at home, only in special cases, when the treatment is given orally or by subcutaneous or intramuscular injection.

## **Is it necessary to fast to be able to have chemotherapy?**

It depends on the chemotherapy. The healthcare personnel will give you all the necessary information. In any case, if in doubt, please talk to your physician or the division nurses.

## **How often is chemotherapy given?**

It is not possible to give everyone the same answer. The frequency with which you will be given chemotherapy depends on:

- the type of drugs used;
- the use of one or more drugs in combination;
- the dosage of the drugs.

Depending on the type of chemotherapy, the frequency of the treatments may change, but this is always programmed to ensure the best result with the minimum side effects.

In most cases, the treatment is done in "cycles". This means that one or more days of treatment will be followed by a few days of rest (*from 7 up to more than 28 days*).

## **What exactly does the "chemotherapy cycle" mean?**

A chemotherapy cycle is a period of treatment followed by a period of rest before the next treatment. For example, a 3-weeks cycle may consist of:

- 3 days of treatment;
- 18 days without treatment (*rest period*).

These days without treatment are necessary to make sure your body recovers from the side effects and produces new healthy cells.

## **How many cycles of chemotherapy will I be given?**

The duration of treatment depends on:

- the type of disease;
- the results obtained with the treatment;
- how you tolerate the treatment.



Usually the physician will inform you right at the beginning about the number of cycles you'll be given.

After 2 or 3 treatment cycles (*approx. 2 to 4 months*) the physician can assess the efficacy of the treatment. The physician will examine you and carry out certain blood tests and diagnostic tests like CT (*Computerized Tomography*) or PET (*Positron Emission Tomography*) etc. Then, in agreement with you, the physician will also assess if there are any side effects and how strong these effects are.

On the basis of these assessments and in agreement with you, the physician will decide whether to proceed with, modify or suspend the chemotherapy or switch to another type of treatment.

## **DAILY LIFE**

### **Will my hair fall out?**

Not necessarily. Not all types of chemotherapy cause hair on the head or body to fall out (*so-called "alopecia"*). Besides not being inevitable, hair loss is always temporary. Hair grows back once chemotherapy is completed and during the period in which the treatment is suspended.

*You will find other information regarding hair loss in the section "General side effects" on page 19.*

### **Can I drink alcohol while I am having chemotherapy?**

It depends. In most cases, it is better to avoid alcohol for at least 2 days after the chemotherapy. After this period you can start consuming alcoholic drinks in small quantities if you feel the need and if you are used to it.

However, for certain types of treatment, it is advisable to avoid alcoholic drinks throughout the chemotherapy. The healthcare personnel will give you all the necessary information. In any case, if you have any doubts, please talk to your physician or the division nurses.

### **Can I smoke while I am having chemotherapy?**

Smoking is harmful to your health, as it is for anyone else. We strongly

recommend that you avoid smoking. If this is a big sacrifice for you, make every effort to smoke as little as possible.

## **Should I follow a special diet while I am having chemotherapy?**

Cancer and cancer treatments do not necessarily require a change in food habits. It is however important for everyone to follow the principles of a healthy and balanced diet.

The first characteristic feature of a good diet, to be adopted also during the course of chemotherapy, is that it must be varied and balanced. This means that the foods we eat must provide all the nutritional substances (*carbohydrates, proteins, fats, vitamins, mineral salts, etc.*) in the right quantity and in the right ratio.

A balanced diet helps to:

- prevent or limit malnutrition and undesirable weight loss;
- deal with the side effects of chemotherapy in the best possible manner;
- make the immune system work in the best possible manner to combat infections.

During the chemotherapy, you must drink at least one and a half litres of liquid a day. This may include soups, tea, herbal teas and fruit juices.

To prevent infections we recommend that you:

- eat meat, fish and eggs only after these have been cooked properly;
- wash fruits and vegetables with a solution of water and sodium bicarbonate or water and Amuchina®.

Certain types of chemotherapy require special attention as regards the diet. In these cases the healthcare personnel will give you all the necessary information. In any case, if you have doubts, talk to the physician or division nurses.

Chemotherapy may have certain side effects which have an influence on the diet. The section "Side effects which have an influence on the diet" (*page 11*) contains certain important indications on how to manage these problems.

## **Can I continue to work and dedicate myself to my hobbies while I am having chemotherapy?**

Many people lead normal lives during the chemotherapy. These persons can continue to work and carry on with their hobbies as usual.

While others find the need to slowdown their pace to some extent. We advise you to try and behave normally according to your needs and requirements. Do what you feel like doing, the way you like doing it. The only general advice we would like to give you is to try and avoid contact with persons who are not in good health, even if it is only an ordinary cold or the flu. During the chemotherapy period your defences may be less effective than usual. Try to avoid crowded places (*dinners, meetings, cinema hall, stadium...*) and try not to catch cold. This does not mean that you have to isolate yourself from your family and friends. You also don't have to stop driving. Just try to avoid situations that can increase the possibility of catching an illness. In special cases, healthcare personnel will provide special recommendations and will indicate the precautions you must adopt. In this regard, always consult the physician in charge of your treatment for advice.

### **Remember that**

Special occupational and healthcare assistance is provided for cancer patients. For more information, please contact the Information Point for patients and family members (*see contacts on page 27*), where specific informative material is available.

## **Can I have sex while I am having chemotherapy?**

Chemotherapy, like other cancer treatments, can cause physical and psychological disorders which may affect sexual life. This may lead to a low libido (*sex drive*). At the end of treatment, everything will tend to return normal.

Try not to change your habits, except for special situations the healthcare personnel will tell you about personally. This means you need not abstain from sex; on the contrary, this may help you to face the treatment period calmly.



If you are a woman of child-bearing age, we strongly recommend that you use effective contraception. A pregnancy during chemotherapy must be avoided because of possible harm to the foetus. Please discuss this matter frankly with your physician.

### **Remember that**

Certain drugs used in chemotherapy can also be eliminated through sperm and vaginal secretions and this may cause problems for the partner. This is why you must always use a condom during sex.

## **Do I have to follow special hygiene standards while I am having chemotherapy?**

Yes, for two main reasons:

- because chemotherapy weakens the immune system, i.e. the system which defends the body from outside attacks such as infections;
- because the drugs used for chemotherapy may be present in the body fluids and in general in all that comes out of our body (*blood, sperm, vaginal secretions, urine, faeces, tears, vomit, sweat, saliva*). Contact with these substances can cause problems like irritation of the skin. This applies to you as well as to those near you.

### **What to do**

- Wash your hands often with soap, especially before touching the face, nose, mouth and eyes.
- Ask those around you to do the same when they are with you.
- Try to have contact with animals only if they are in good health and well kept.
- Make sure meat, fish and eggs are cooked properly.
- Wash fruits and vegetables with a solution of water and sodium bicarbonate or water and Amuchina®.
- Ensure your personal hygiene.
- Keep your mouth clean, to avoid oral mucositis (see page 13).
- Keep your towels, cups and cutlery separate.

*Furthermore, during chemotherapy and for the next 2 days:*

- use a separate toilet, if possible;
- clean the sanitary ware carefully with Amuchina® after use;
- both men and women should sit on the toilet to use it to avoid splashing;
- put the lid down before pulling the flush;
- flush the toilet twice;
- use a condom when having sex because certain drugs may also be eliminated through the sperm and vaginal secretions (*also see page 9*);
- always wash your clothing in a washing machine (*do not wash by hand*);
- wear disposable gloves before coming in contact with body fluids or other material.

### **What to avoid**

- Visiting closed, crowded places such as the movie theatre, supermarkets, churches, public transport.
- Direct contact with persons who are not in good health, even if it is only an ordinary illness like a cold or sore throat.
- Eating raw meat, fish and eggs.
- Eating sea food (*mussels, clams, etc.*).
- Drinking directly from the bottle; always use a glass.

*Moreover, during chemotherapy and for the next 2 days:*

- Avoid close contact with small children and pregnant women, especially in summer, because certain drugs are also eliminated through sweat and saliva.

### **Remember that**

Following these rules does not mean you should isolate yourself from the rest of the world. By following these precautions your near and dear ones will be allowed to visit you, if they are in good health.

## SIDE EFFECTS

As we have said on page 4 chemotherapy can cause a series of problems, the so-called "*side effects*". Some of these side effects can have an influence on the diet, while the others concern other aspects of your life.

In the following pages you will find a list of some of these side effects, together with some advice to deal with these in the best possible manner. Please talk frankly to your physician about your problems.

### Remember that

- Side effects are not always present. You may have some of these problems or you may not have any of these problems.
- If you do not have any side effects, this does not mean the treatment is not working.
- The intensity and duration of the side effects varies from person to person, and depends on the drugs used and your body's reaction to these drugs.
- The side effects almost always improve or disappear completely once chemotherapy ends.

## SIDE EFFECTS THAT HAVE AN INFLUENCE ON THE DIET

### Changes in taste and smell

Some of the drugs used for chemotherapy and, in certain cases, radiation therapy too can cause changes to your sense of taste and smell. This is why, sometimes, all foods seem to be salty or bitter or seem to have a "*metallic*" taste. Many foods, including your favourites, may also seem bland or "*bad*". The changes in taste and smell are however not permanent and will disappear when treatment ends.

### What to do

- Use plastic cutlery instead of metallic ones.
- Try to use pots and pans other than the normal metal ones for cooking. When this is not possible, transfer the food to glass containers immediately after it is cooked. This can also help reduce the "*metallic*" taste of foods.

- Eat foods with a “neutral” flavour such as bread, pasta, rice and polenta. These are often better tolerated than foods with a more marked flavour.
- Add aromatic herbs and spices to your foods. You can also use garlic, onion, vinegar or lemon juice.

### What to avoid

Eating red meat (*fish is preferable*), coffee, tomatoes and sour juices, if all the foods seem to have a bitter taste.

## Diarrhoea

Diarrhoea is passing unformed or liquid faeces three or more times a day, with or without pain.

Chemotherapy, like radiation therapy, can cause inflammation of the intestinal mucosa, and this can cause diarrhoea.

### Always consult your physician if:

- you have diarrhoea (*3 or more stools*) for more than one day;
- you have cramps or stomach ache (*abdominal pain*);
- you find you are urinating too little or not at all;
- you are unable to eat or drink enough.

### What to do

- Try to have smaller and more frequent meals or snacks during the course of the day.
- Try to drink at least one litre of liquid a day, choosing between: water, salt supplements, apple juice, tea (*not strong*), clear vegetable broth.
- Try to drink slowly and choose beverages at room temperature.

### What to avoid

- Smoking and consuming tobacco in any form whatsoever. Even Tobacco and cigarette smoke can worsen the diarrhoea.

Below there are some indications as regards the foods you should choose, those you should avoid or consume only in small amounts.

### Recommended foods

- Foods rich in sodium and potassium: bananas, oranges, peach and apricot juices, boiled potatoes and pureed potatoes.
- Foods poor in fibres: rice or pasta, toasted bread and plain



yogurt, cream of cereals, pureed vegetables, carrots.

- Ripe bananas, peeled grated apples, canned fruit or cooked without peel.
- Fish (*fish fat reduces the inflammation*).

### **Foods to be avoided**

- Large quantities of foods rich in fibres such as fruit (*especially with peel*) and vegetable.
- Tomatoes and tomato juice.
- Sweets and confectionery containing artificial sugars.
- Baked products, because the fibres hardened by baking can mechanically irritate the intestinal mucosa and worsen the inflammation.
- Meats and cheeses, especially aged/cured, because during digestion they can free substances that irritate the intestinal mucosa.
- Very spicy, oily, fried foods.
- Foods and beverages containing caffeine (*coffee, coca cola*) and chocolate.
- Very hot or very cold beverages.
- Beer, wine and other alcoholic beverages.
- Sugary and carbonated drinks.
- Milk or milk-based foods like ice cream, partly frozen drinks, sour cream.

### **Remember that**

Once your diarrhoea is no longer severe, you can start eating yogurt enriched with probiotic microorganisms (*lactobacilli, bifidobacteria, etc.*) everyday to favour the reconstitution of the intestinal bacterial flora.

## **Inflammations of the mouth (oral mucositis or stomatitis)**

Oral mucositis, or stomatitis, is an inflammation of the mouth which can cause reddening, ulcers or small wounds, accompanied by a sensation of burning or pain. More rarely, especially if the early symptoms are not treated, oral mucositis can lead to infections of the gums, teeth and tongue.

Sometimes, oral mucositis may be accompanied by a dry mouth (*xerostomia*), i.e. reduced production of saliva.

Following the recommendations given below will help prevent oral mucositis or limit the problems, if these were to occur.

### **Always consult your physician if:**

- the burning and pain last more than 2 days;
- there is bleeding in the gums and mucosa (*i.e. the inner lining of the mouth*);
- you have a fever;
- the problems prevent you from eating or drinking;
- the inside of the mouth is covered with spots or white plaques.

### **What to do**

- Before starting cancer treatment, have a dental check up to ensure your mouth is healthy and solve problems if any. Have your teeth cleaned professionally before starting treatment to reduce the bacterial load present in the mouth and which, during the course of treatment, could favour infections.
- Take special care to keep your mouth clean. Clean your teeth with a soft brush, after every meal and before going to bed.
- Rinse your mouth regularly with neutral solutions (*for e.g. with saline solution or water and bicarbonate*) every morning, every evening and after cleaning your teeth. In certain cases nursing personnel and/or the physician can recommend and provide you with more specific products for use.
- Keep dentures and dental prosthesis clean and sanitised. Use dentures only during meals, to prevent inflammation of the gums.
- Check the inside of your mouth regularly. This will help detect possible problems such as bleeding, wounds, canker sores or white spots immediately.

### **What to avoid**

- Using dental floss and toothpicks as these can cause small wounds on the gums.
- Smoking and consumption of tobacco in any form whatsoever.

*Below there are some indications as regards the foods you should choose, those you should avoid or consume only in small amounts.*

### **Recommended foods**

- Cold foods or foods at room temperature.
- Soft foods that are easy to chew and swallow: (*such as cream of cereals, especially rice, pureed legumes, potato puree*).
- Fruit, fresh smoothies with fruit and yogurt, to sooth the irritated mucosa.
- Drink lots of liquid during the course of the day (*at least one and a half litres*). Poor hydration can reduce the production of saliva and worsen the dryness of the mouth.
- Herbal teas, decaffeinated tea, fruit juices, except those of citrus fruits.
- Cold water, ice lollies and ice cubes can alleviate the burning sensation.
- You can eat a few sugarless candies or chew sugar-free gum for relief from dryness of the mouth.

### **Foods to be avoided**

- Very salty foods (*potato crisps, salty or smoked snacks*).
- Fatty cheese, confectionery, chocolate.
- Wholemeal bread or wholemeal baked products.
- Spicy or hard foods.
- Fizzy beverages, sugary beverages, vinegar.
- Beverages containing alcohol or caffeine, as these are irritants.
- Tomatoes, kiwi, oranges and all other citrus fruits and their juices.

## **Nausea and vomiting**

Nausea and vomiting can be controlled, and often successfully, with certain types of drugs. These drugs will be administered simultaneously with the chemotherapy and, if necessary, after chemotherapy. Adopting certain measures in your diet and behaviour will however be helpful to keep nausea and vomiting under control.

### **Always contact your physician if:**

- you have been vomiting a lot for more than one day;
- you feel you have seen blood in the vomit;
- you are unable to eat or drink sufficiently;
- you are unable to take your medicine orally.

### **What to do**

- Take slow, deep breaths when you feel nausea and use relaxation techniques if possible.
- Try to eat small and more frequent meals or snacks during the course of the day so that your stomach never stays completely empty.
- Eat and drink foods at room temperature or cooled food. This will help avoid problems due to strong odours.
- Choose dry salty foods such as rice cakes, crackers, toast and add something salty like a small anchovy.
- Prefer foods with a “*neutral*” flavour like rice, potatoes, semolina, polenta, millet, cooked fruit. These foods are usually better tolerated.
- Prepare foods prior to the days of therapy (*freeze if necessary*) for those days when you will not feel like cooking or ask someone else to cook food for you.
- Eat foods that you like.
- Eat light, bland foods; preferably grilled, steamed or baked.
- Once the vomiting has stopped, first of all, drink small amounts of liquids.

### **What to avoid**

- Odours that bother you (*odour of food, smoke, perfumes*).
- Drinking large amounts of liquid with meals.
- Carbonated drinks.
- Sweets.
- Very spicy foods.
- Foods which, even if they are bland, have a very intense flavour.
- If you have a burning sensation in your stomach, limit the consumption of coffee, black tea, raw vegetables and sour beverages.



## Loss of appetite

There are many factors which may cause loss of appetite. This is sometimes linked to a certain phase of the disease (*for e.g. after surgery or if you are in severe pain*). You may also not have any appetite when you are a bit anxious or depressed. However, very often, it is the treatments (*chemotherapy and radiation therapy*) which cause loss of appetite.

### Always consult your physician if:

- you are unable to eat or drink sufficiently;
- you have lost a lot of weight in a very short time.

### What to do

- Try to do some physical exercise before you sit down to eat. Even a walk in the open air can help your appetite.
- Eat what you like and try to change the menu often.
- Try to have light main meals and, if necessary have a snack towards mid morning and in the afternoon. It is easier to eat a little at a time.
- Always have something to eat ready at hand. So when you suddenly feel slightly hungry, you will still have an appetite while preparing your meal.
- Sip fresh fruit smoothies between meals.
- Present your meals and snacks well with care. Appearances count!
- Drink beverages that stimulate the appetite such as fruit juices, vegetable juices, etc.
- Try to drink lots of water far between meals. If you prefer, you can drink herbal teas and teas instead.

### What to avoid

- Skipping meals.
- Drinking too much during meals.

## Constipation

Chemotherapy can sometimes make bowel movements difficult. This may be because of reduced intestinal movements or changes in the composition of the stools. The problem is usually mild and can be

controlled with light laxatives and/or certain measures linked to the diet and lifestyle.

### **Always consult your physician if:**

- you have not had a bowel movement for 2 or 3 days (*even less, if you have used laxatives*)
- you have stomach pain with cramps or spasms (*involuntary muscle contractions*) accompanied by nausea or vomiting.

### **What to do**

- Drink lots of liquids, especially far between meals.
- Make it a habit to have a hot drink in the morning. This will stimulate the bowel movement.
- To have regular bowel movements without resorting to medicines, try and take advantage of what Nature has to offer: plum juice, grape juice, orange juice and stewed apples.
- Follow a fibre-rich diet. A series of foods you should choose from is given below:
  - \* Cereals and derivatives: wholemeal bread and pasta, brown rice, wholemeal flour, oats, pearl barley, spelt, wholegrain rye. Add bran to soups and have muesli for breakfast.
  - \* Fruit: apple, pear, kiwi, pomegranate, orange, plums, persimmon, figs, pineapple, coconut and, generally, all fruit with peel. Dried and dehydrated fruit.
  - \* Vegetables: carrot cabbage, artichoke, broccoli, runner beans, turnip, spinach, beets, leeks, mushrooms.
  - \* Legumes: beans, broad beans, lentils, chickpeas, peas, soya.
- As far as possible, try to get some exercise every day.

## **GENERAL SIDE EFFECTS**

### **Anxiety, Depression, Insomnia and other psychological disorders**

You may feel anxious, depressed, frustrated, angry, etc. while undergoing chemotherapy. This is quite normal and understandable

in your situation. You must talk frankly to your physician and nurses. The possibility of “*letting off steam*” offered by a free and informal chat can help reduce the stress and worries related to the treatment of the illness. In some cases, you may be able to get the help of a psychologist at the division where you are being treated. The psychologist may also be able to recommend a technique for relaxation and the physician will assess the possibility of prescribing a drug. Anxiety may also cause lack of sleep and poor sleep. In this case too, you should talk to your physician, because there are drugs that can reduce or eliminate this disorder altogether.

## **Burning in the eyes**

In some cases, the drugs used for chemotherapy can cause conjunctivitis, i.e. inflammation of the conjunctiva, the membrane lining the inner part of the eyelids to the eyeball. This can cause a burning sensation in the eyes.

**Always consult your physician if:** you have this problem.

### **What to do**

- Wear sunglasses.
- Use cooling, soothing eye drops.

## **Hair loss**

Partial or total hair loss (*alopecia*) is one of the well known side effects of chemotherapy feared by patients. Hair loss is caused not only due to the actions of the drugs but also due to a person's sensitivity to the drugs.

### **Remember that**

Not all drugs cause hair loss. Moreover, hair loss is temporary. The hair will grow back once chemotherapy ends.

### **What to do**

- Cut your hair. Short hair will make it easier for you to manage hair loss.
- After washing your hair, dry it at low temperatures.
- If you have lost a lot of or all your hair, you can consider wearing

a wig, or a cap or a scarf. This will be not only an aesthetic but also a psychological help.

### **What to avoid**

- Washing your hair too often.
- Using round hair brushes because these can pull out hair easily.
- Dyeing your hair or having a perm while you are having chemotherapy.

### **Changes to the nervous system**

Certain drugs used for chemotherapy can cause damage to nerves, i.e. they are neurotoxic. These can cause problems such as:

- impaired hearing;
- buzzing or whistling in the ears;
- a tingling sensation in the hands and feet.

**Always consult your physician if:** you have any of these problems.

**Remember that** these problems sometimes get better, but may not disappear completely after the treatment ends.

### **Changes in blood components**

#### **(leukopenia - anaemia - piastrinopenia)**

As mentioned on page 3, chemotherapy can affect the working of the bone marrow. The bone marrow is present inside certain bones of the body and has the function of producing certain types of blood cells i.e.:

- **White blood cells:** these cells defend the body from possible infections;
- **Red blood cells:** these cells transport oxygen throughout the body, thanks to a substance called "haemoglobin";
- **Blood platelets:** these are cell fragments that allow coagulation of blood. For example, when you are wounded, thanks to the platelets, the blood clots on the wound and bleeding stops.

During the chemotherapy, the bone marrow may produce only



smaller quantities of these cells. This means the blood may be lacking in these cells. In such cases, it may be:

- leukopenia, when the blood contains fewer white blood cells;
- anaemia, when the blood contains fewer red blood cells or less haemoglobin;
- piastrinopenia, when the blood contains fewer platelets.

These effects are temporary and tend to disappear at the end of therapy.

To be able to have chemotherapy, the blood must contain sufficient amounts of white blood cells, red blood cells, haemoglobin and blood platelets. This is why a blood test must be done to check these values before every chemotherapy cycle. It is often necessary to carry out these blood tests also between one cycle and the next.

If the blood tests show a small reduction in the quantity of white blood cells, red blood cells, haemoglobin or platelets, the physician can decide whether to:

- postpone the cycle by a few days;
- proceed with the therapy in any case with a smaller dose of drugs.

On the other hand, if the analysis shows a very small number of these cells in the blood, the doctor will provide you with all the necessary instructions. In such cases, the physician may also decide to use certain medicines to stimulate the bone marrow, called "*growth factors*". These medicines can, sometimes, cause pain in the bones, especially in the lower back, hip, shoulder blades and sternum. The doctor will give you medicines to keep the pain under control, if necessary.

**Always contact your physician if:**

- you have a fever of 38 °C or higher;
- you have the shivers;
- you are excessively thirsty;
- you have cough or difficulty breathing;
- you have noticed bruises all over your body;
- you have bleeding;

- you have been given “*growth factors*” and have pain in the bones.

## **Changes in the skin and nails**

Few drugs used for chemotherapy can change the appearance of the skin. In these cases you may see changes in the colour of your skin, as for example, darker stripes or spots. You may notice that the skin also becomes darker along the veins into which the chemotherapy has been infused.

Sometimes there may be blackish streaks in the nails.

These modifications in the colouring of the skin and nails tend to disappear once treatment ends, even if it takes some time.

### **Remember that**

Many drugs used in chemotherapy are photo-sensitizing, i.e. they react with the UV rays of sunlight. This is why we recommend that you avoid direct exposure to the sun.

### **What to do**

- When in the open air by day, always wear clothing that protects you from the sun’s rays (*jersey, cap and sunglasses*).
- Use sunscreens with filters for total protection on parts of the body not protected by clothing.

### **What to avoid**

Do not sunbathe (*at the seaside, by the swimming pool or in the mountains*) and avoid intentional exposure to the sun. If you cannot avoid this, always wear clothing that will protect you from the sun’s rays (*jersey, cap, sun glasses*) and use a sunscreen for total protection on the areas of the skin not protected by clothing.

## **Effects on fertility**

Certain drugs used in chemotherapy can cause damage to the cells of the testicles and ovaries which may consist in:

- for men: changes in the quantity and quality of the spermatozoa;
- for women: irregularities of the menstrual cycle or interruption

of menstruations.

These problems do not occur in all cases and may disappear at the end of the chemotherapy period. Therefore, there may not always be permanent damage to the fertility and i.e. the possibility of having children.

During the chemotherapy and for a year after the end of the treatment, you must, in any case, avoid having children because there is risk of possible damage to the foetus. This is why you must adopt effective contraception also if menstruation is interrupted or stops.

### **Always contact your physician if:**

- you wish to have children in future;
- you note irregularities in your menstrual cycle;
- for women: if you think you are pregnant;
- for men: if you think your partner may be pregnant.

### **Remember that**

There are methods to safeguard the possibility of your having children even after chemotherapy:

- for men, sperm can be collected and stored;
- for women, during chemotherapy different techniques may be proposed to preserve the fertility. Talk frankly to your doctor.

## **Fever**

Fever is an increase in our body temperature. It is an important defence mechanism our body adopts in various circumstances. The most common causes are:

- the presence of an infection under way;
- the presence of an inflammation;
- a reaction to a drug;
- your disease.

In other cases it is not possible to identify a specific cause for the fever.

### **Always contact your physician if:**

- you have a fever of 38 °C or higher;
- you have been having a fever for more than twenty-four hours

which is not solved with antifebriles;

- you have a headache;
- you feel disoriented;
- you have the shivers;
- you see any changes in your skin as reddening, swelling or marks;
- you have itching;
- you have a cough or sore throat;
- you have difficulty breathing;
- you feel a burning sensation while urinating.

### What to do

- Drink lots of liquids, not just water, but also fruit juices, freshly squeezed juice, mineral salt supplements, tea.
- Take rest and keep warm.
- If the fever is higher than 38 °C you can take medicine for the fever (*antifebriles* or *antipyretics*) like paracetamol (e.g. *Tachipirina*®).

### What to avoid

- Covering yourself too much if you are running a high temperature.
- Taking other medication at your own initiative.

## Chemical phlebitis

Chemical phlebitis is an inflammation of a superficial vein caused by the drug infused into the vein. This may happen mainly in cases of infusion of drugs that last a long time. Chemical phlebitis is usually accompanied by pain and redness along the vein in which the drug has been infused.

### Always contact your physician if:

during or after treatment you feel:

- pain;
- burning sensation;
- itching sensation.

The doctor and nurses will thus be able to act rapidly. In certain

cases, it may be necessary to have a special treatment.

[Also see “*Extravasations of drugs*” on page 26]

## Itching

Itching may be due to the intake of any drug.

**Always contact your physician if:** if you have this problem.

### What to avoid

Taking antihistamines on your own initiative; talk to your doctor first.

## Hiccups

This problem is caused by an involuntary contraction of the diaphragm, followed by a sudden closure of the vocal cords which produces the characteristic “hic” sound.

**Always contact your physician if:**

- the hiccups last more than 48 hours;
- the hiccups prevent you from resting;
- the hiccups prevent you from eating and drinking.

### What to do

Talk to your doctor or the nurses. Although there are no natural effective remedies, the doctors and nurses can help solve your problem and suggest more specific drugs which your doctor can prescribe.

### What to avoid

- Heavy meals.
- Eating too fast.
- Carbonated beverages.
- Drinking alcohol.

## Tiredness, fatigue

When you are undergoing chemotherapy, you may feel tired or have a general feeling of fatigue.



This disorder may be aggravated by the presence of other side effects of chemotherapy such as lack of appetite (see page 17), vomiting (see page 15), diarrhoea (see page 12). At other times you may feel tired even without other problems.

There is no specific treatment for this problem; you must talk to your doctor, in any case.

For other indications on behaviour and lifestyle also read the section on *"Can I continue to work and dedicate myself to my hobbies while I am having chemotherapy?"* (see page 8).

## **Extravasations of drugs**

As we have seen on page 4 chemotherapy is given by many methods. The most frequent of these is by infusing the chemotherapy directly into the vein (*intravenously*). It may so happen that a part of the drug comes out of the vein into which the drug has been infused. If this happens, lesions may appear in the areas that come in contact with the drug coming out of the vein.

**Always contact your physician if:** during or after treatment you feel:

- pain;
- a burning sensation;
- itching.

The doctor or nurses will thus be able to act rapidly. In some cases, it may be necessary to carry out special treatment according to the type of drug that has come out of the vein.

*[Also see "Chemical phlebitis" on page 24]*

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*Moreover we inform you that...*

Inside Arcispedale Santa Maria Nuova – Research Hospital - there is an Information Point for Patients and Relatives, connected to Medical Library; it is possible to ask for good quality and free information on health.

*How to reach us:*

CORE on Monday and Thursday from 9 a.m. to 12 a.m. – tel. 0522 296497.

Medical Library: from Monday to Friday, from 9 a.m to 3 p.m. - tel. 0522 295992– 0522 295992

*Person in charge:* Elena Cervi (Biblioteca Medica ASMN)

[infopazienti@ausl.re.it](mailto:infopazienti@ausl.re.it); <http://biblioteca.asmn.re.it/puntoinformativo>

## Sources consulted for preparing this booklet:

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Website American Cancer Society ([www.cancer.org](http://www.cancer.org).)

Website Associazione Italiana Malati di Cancro Parenti e Amici ([www.aimac.it](http://www.aimac.it))

Website Associazione Italiana per la Ricerca sul Cancro ([www.airc.it](http://www.airc.it))

Website National Cancer Institute ([www.cancer.gov](http://www.cancer.gov))

UpToDate ([www.uptodate.com](http://www.uptodate.com))

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Reviewed in October 2013