

# NUTRITION AND EXERCISE

## for patients with gynaecological tumours



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## INTRODUCTION

The right nutrition and sufficient physical activity are important components of the prevention and treatment of gynaecological tumours. In general, we can influence a patient's nutritional status and exercise regimen to a greater extent than the other medical interventions or other factors that together determine the treatment result.

This leaflet is primarily intended for patients with gynaecological malignancies and their families. Other interested parties who enjoy seeking science-based information on the relationship between malignant disease and nutrition may also find it useful. Its objective is to answer questions about nutrition and physical activity in the course of and after cancer treatment. It also provides recommendations for dealing with the difficulties that can accompany this disease and its treatment. Parts of the publication are also instructions how to recognise trustworthy sources of information, where to find them, and where to seek professional advice and help. The information included in this leaflet is supported by the results of scientific research but should not replace medical care or the professional advice of your treating physician and other members of the medical team.

Dealing with cancer is a demanding process that continues even after treatment, significantly influencing your life after diagnosis.

### Goals for patients with a gynaecological malignancy:

- 1.** Learn to eat healthily, so that your body has enough high-quality nutrients at disposal to be able to heal and recover and so that you enjoy the pleasures of eating healthy food.
- 2.** Reach and maintain optimal body weight and the best functional status possible.
- 3.** Prevent cancer recurrence and also the formation of a new tumour or other chronic disease, (such as atherosclerosis, diabetes or osteoporosis) by pursuing an active lifestyle and regular follow-up visits.
- 4.** Incorporate regular physical movement during the course of treatment and maintain it after the treatment has finished; exercise is an effective tool for increasing stamina, muscle strength, and self-confidence. It also decreases fatigue and depression and improves treatment results as well as overall quality of life.





## INFORMATION SOURCES

It is natural that, after having dealt with the first shock of a diagnosis, patients with newly diagnosed malignant disease try to fight the illness and heal. Part of this process is also research about the disease and its treatment by contacting experts, family, and friends, and searching the internet.

Within this search we should always try to adhere to certain rules, among which we can name common sense, healthy judgment, and a certain perspective when receiving new information. It is not always easy to find scientifically substantiated advice and separating it from untruth and myths at first sight is not straightforward.

You should be suspicious of any recommendations for products and dietary practices that promise breakthrough results or even miracles. A warning sign is evidence about its efficacy based only on testimonials or the results of single cases. Articles about scientific findings in mass media typically lack the necessary details and usually only refer to scientific sources.

Not even the positive results of one single study are unequivocal proof of the efficiency of a new treatment. A scientific approach to knowledge requires that the acceptance of new thoughts by medical professionals is proven by similar results in more scientific papers.

Always try to verify the information you obtain with the members of your medical team. At the same time, no one will restrain you from actively searching for information and articles to make your own conclusions and decisions based on them. The principle of informed consent with its suggested process of diagnostics, treatment, and follow up requires your active approach and interest.

## How do I know if the medical information I find is trustworthy?

- Where was the information published? Is it a medical journal (ideally a reviewed journal) or is it a lifestyle magazine?
- Who financed the study?
- How many patients were involved in the study?
- How do the results correspond with the findings of previous similar studies?

When you are offered pieces of advice that seem too simple, it is good to be cautious. Please gather information only from trusted sources. Consult with your physician before trying any cancer treatment, including 100% natural products, since they might negatively influence the efficacy of your oncological treatment.



## Frequently Asked Question No. 1

### What is a placebo and how is it linked to alternative treatment methods?

Placebo, also known as the placebo effect, has a positive effect on health and is prescribed for its psychological benefits and not for the effect of the physical substance that is administered as a placebo to the patient. Typically, harmless substances in tablet form are given to the patient; for example, they may contain milk sugar.

This effect is explained by autosuggestion—the patient is convinced that she has been effectively treated and expects her health condition to improve. This expectation leads to the suppression of negative changes and the exaggeration of the positives, so the patient believes she is feeling better. Also, patients become convinced that they have received high quality care.

This knowledge results in stress reduction and can lead to factual improvement of their health thanks to the patient's physiological response to the placebo. The placebo effect works for all patients, but the level of the effect varies individually. Also, placebo efficacy differs for individual disease types. The symptoms of diseases, such as pain or depression, react to placebo strongly; however, cancer is influenced only minimally, mainly in terms of probability of treating this disease.

Placebo can work well on some of the side effects of cancer or its treatment. The placebo effect is predominantly responsible for the incidental therapeutic effect of alternative medicine substances, which lack their own, specific efficacy.

### Common myths about cancer in relation to nutrition

- I have to be careful with food preparation because cancer is contagious.
- I have to stop using artificial sweeteners because they are carcinogenic.
- I have to stop eating simple carbohydrates (sugar) because they accelerate tumour growth.
- I must exclude meat from my diet to heal faster.
- I should stop working out and save my energy to fight the cancer.
- I should stop eating at all to “starve” the cancer by not providing it with nutrition.

## MEDICAL TEAM AND NUTRITION

The diagnosis and treatment of gynaecological cancers should be carried out as soon as possible under the leadership of specialists in gynaecological oncology, ideally in specialised centres.

Modern medicine is a multidisciplinary field. Medical teams include physicians and nurses of course, but also expert roles such as physiotherapists, clinical psychologists, pharmacists, nutrition therapists, and others. Please discuss your nutrition and diet recommendations with your nutrition therapist or with a nutritionist (a physician specialising in clinical nutrition).

Please do not confuse a physician nutrition specialist with a nutritional advisor. These are practitioners who usually have their practice outside of hospitals and do not have formal medical education. Instead, your ideal cooperation is with a dietitian nutritionist or physician nutrition specialist directly in the hospital where you are being treated for cancer.

Please inform your medical team continuously about your diet regimen and any food supplements you take. A varied diet contains up to thousands of individual nutrients.

The majority of successful strategies are done by adjusting the diet as a whole, and not only adding or subtracting single nutrients or supplements. In cases where your diet is not meeting your nutritional needs, artificial nutrition might be recommended (see the “Artificial Nutrition” section later in this leaflet).

## NUTRITION AND THE PREVENTION OF CANCER DEVELOPMENT

The development of cancer is a multifactorial matter. Eating the wrong diet, being overweight, and lacking physical activity are all important risk factors for some tumours, including gynaecological malignancies.

The body's ability to suppress the development of cancer can be reinforced by a healthy diet, regular physical activity, and the prevention or reduction of obesity.

### Characteristics of a healthy diet

A healthy diet that decreases the risk of developing cancer is rich in vegetables, fruit, whole-grain bread, and legumes. It includes a controlled amount of red and processed meat.

The essence of a healthy diet is a varied array of necessary nutrients, including vitamins, minerals, and trace elements. It also includes enough phytonutrients (from Greek phyto = plant), natural substances typically found in a vegetarian diet.

These substances help us neutralise potential carcinogens and toxins. Some of them contribute to your body's ability to correct cellular damage while other types directly prevent the reproduction of tumour cells that would develop due to this damage. All this means that a healthy diet can help stop the carcinogenic process in different phases of its development.

### Top diet tips for cancer prevention

- Take a close look at your plate. At lunch or dinner, half the plate should be vegetables, one quarter a wholegrain side dish, and the rest a high-quality protein source. High-quality protein sources include, in particular, fish, poultry, and legumes.
- Get enough fibre. You need an adequate intake of fibre in the form of vegetables, fruit, wholegrain cereals, and legumes. If you need to increase the amount of fibre in your diet, do it little by little so your digestive system gets used to it.
- Know your serving sizes. Your daily intake of fruit and/or vegetables should be at least 5 servings. One serving is 1 ladle of raw or cooked vegetables or 1 medium-sized apple.
- Reduce the amount of red meat and fundamentally limit your consumption of meat products (sausages, salty meats), confectionery, and fast food.
- Limit your intake of alcohol and sweetened sodas, which can be replaced with water.





A healthy diet does not mean you should prohibit types of food—it does not even mean the complete restriction of junk food. A positive attitude to nutrition in terms of the amounts, proportions, and sources of individual nutrients should go hand-in-hand with the pleasure of eating in a nice environment and good company.

AS AN EXAMPLE, TRY THESE TWO HEALTHY RECIPES:

Couscous with chicken



- ✓ 150 g chicken breast
- ✓ 40 g thinly sliced bacon
- ✓ 10 mL olive oil
- ✓ Gyros spices
- ✓ 80 g couscous
- ✓ 160 mL water
- ✓ Salt
- ✓ 5 mL oil
- ✓ 30 g dried tomatoes
- ✓ 20 g pitted green olives
- ✓ 50 g cherry tomatoes
- ✓ 30 g Romaine lettuce
- ✓ Pesto

1 portion

Preheat the oven to 200 °C.  
Cut the chicken breast into pieces of about 50 g; cover them in oil and spices. Wrap each chicken piece in bacon. Set the wrapped pieces next to each other in a baking dish and bake them covered in the oven for 30 minutes at 200 °C.  
In the meantime, mix couscous with salt and oil and pour hot water over it. Cover and let sit for 15 minutes. Fluff with a fork. In a large bowl, mix the prepared couscous with pesto, chopped dried tomatoes, olives, and cherry tomatoes. Gently toss with the Romaine lettuce, then top with chicken and serve.

3672 kJ 873 Kcal  
64 g proteins 42 g fats 54 g carbohydrates

Baked eggplant with mozzarella and potato puree with celeriac



- ✓ 1 eggplant (approx. 150 g)
- ✓ Salt
- ✓ 15 mL oil
- ✓ 100 g mozzarella cheese
- ✓ 100 g tomato puree
- ✓ 20 g Parmesan cheese
- ✓ Fresh basil
- ✓ 200 g potatoes
- ✓ 50 g celeriac
- ✓ 50 mL cream with a fat content of 10–12%
- ✓ 3 g crushed sunflower seeds

1 portion

Preheat the oven to 200 °C.  
Wash the eggplant and cut into slices. Salt the slices and let them rest until they draw out the juice. Wipe them dry with a paper towel and fry the slices until they are brown. Place slices of eggplant and mozzarella into a baking dish in alternating layers. Pour tomato puree over the dish and add fresh basil leaves and Parmesan chips on top. Bake in the oven for 15 minutes at 200 °C.  
Boil the potatoes together with pieces of celeriac and salt. When the potato is tender, drain and mash. Add the cream slowly while mashing. Sprinkle crushed sunflower seeds on top before serving.

3607 kJ 862 Kcal  
41 g protein 50 g fats 73 g carbohydrates

Frequently Asked Question No. 2

Is it better to eat organic or “bio” groceries and other food?

People prefer to eat organic food for various reasons. From a health standpoint, the foremost reason is the lower amount of pesticides and other chemical substances than are used in conventional agriculture. However, the permissible levels of residual substances in conventional agricultural products are well specified so when these levels are respected, the risk of developing cancer does not increase.

Also, there is no evidence that organic groceries contain more high-quality nutrients important for cancer prevention than conventional ones. Organic groceries are more expensive and therefore less accessible. In summary, eating a sufficient amount of fruit, vegetables, wholegrain cereals, and legumes is important for your health, irrespective of whether the groceries are grown via organic or conventional farming standards.

Inflammatory reaction, weight, and your health

Inflammatory reaction is a very important defence tool for the body and therefore is a basic prerequisite for human survival. Without the presence of an inflammatory response to an injury, infection or even a tumour, we would not recover.

On the other hand, an intense or prolonged (chronic) inflammation can cause a higher risk of functional impairment of important organs and a number of other diseases. Particularly, a prolonged chronic inflammation can lead to the damage of cellular genetic information and so is very dangerous. Excess body weight and obesity lead to the multiplication of fat cells and in this way contribute to higher inflammatory activity.

Fat cells produce inflammatory mediators, which are cell products that run the course of inflammatory response. Chronic inflammation with a low intensity is exactly the result of an abundance of fat tissue, mainly in situations when we do not have enough physical activity and we lose muscle mass and strength. Obesity has a proven impact primarily on endometrial cancer amongst all gynaecological malignancies.

Optimal body weight and body fat distribution

To assess the category of body weight, we use its conversion to body height. This is the Body Mass Index or BMI. The formula for BMI is weight in kilogrammes divided by height in metres squared (kg/m<sup>2</sup>).

BMI categories	
• Severely underweight:	<16.5
• Underweight:	16.5 – 18.4
• Ideal (healthy) weight:	18.5 – 24.9
• Overweight:	25.0 – 29.9
• Obesity:	30.0 – 39.9
• Extreme obesity:	>40.0



BMI, however, does not distinguish the proportion of muscle and fat in the body. The risk here is a high proportion of fat. Therefore, even a body builder can easily exceed BMI 30 even though he is not obese. A relative proportion of fat reserves, together with their distribution on the body, significantly determines the formation of diseases connected with being overweight, including tumours. Fat cells grow in size with increased body weight.

The riskiest is the accumulation of fat in the abdomen near organs. These deposits of fats are called visceral fat, and they give your body an apple shape. People suffering from visceral obesity have a higher risk of developing diseases resulting from their weight than those who have more subcutaneous fat on their hips, buttocks, and thighs and whose body is more pear-shaped.

Moreover, visceral fat produces more inflammatory factors and increases the level of the hormones insulin and oestrogen, which in turn increases the risk of developing a tumour.

The proportion of fat in the body can be measured thanks to special instruments, which only have limited accuracy, but are very good for orientation. You can carry out an even easier estimation of risk for yourself by measuring your waist circumference above the hip bone spur when you exhale. We consider values above 80 cm risky.

### The significance of specific nutrients

The intake of sugar itself, or, more accurately, **carbohydrates**, does not increase the risk of developing cancer or its progression. Sweet meals with a high volume of monosaccharides increase a person's tendency to gain weight and become obese.

Moreover, these meals are often relatively poor on other nutrients, mainly proteins, vitamins, trace elements, and biologically active substances, which are important for muscle growth and fast recovery and also for cancer prevention.

We should prefer cut fruit instead of fruit juices

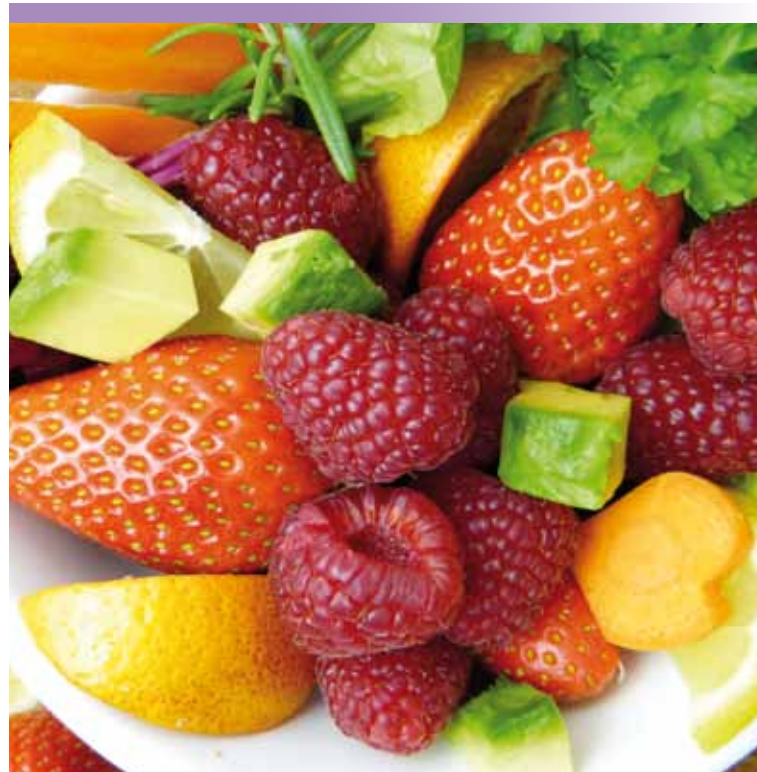
and smoothies - it is a very valuable source of **fibre** and other phytonutrients found in the fruit skin. Fibre helps fight against obesity and weight gain as it decreases your appetite to eat.

Animal and plant **fats** are another very important part of nutrition.

In addition to energy, they provide the body with essential fatty acids that our metabolism cannot produce. As with carbohydrates, an increased amount of fat can lead to weight gain; however, the composition of the fats we consume is significant. Saturated fats together with fats with saturated fatty acids present a health risk due to their pro-inflammatory effects. On the other hand, unsaturated fatty acids, like those found in olive oil and fish, have a positive effect on health.

In addition, a sufficient intake of **protein** is an essential part of a healthy diet. Sources of high-quality protein are lean meat, mainly fish and poultry, eggs, dairy products, nuts, seeds, and legumes. The importance of proteins increases during the treatment of malignant disease in all phases, particularly in the recovery phase.

Further information about the content and quality of protein sources will follow.



## Frequently Asked Question No. 3

### Does the consumption of sugar initiate the development and growth of tumours?

There is a widely spread rumour that monosaccharides, mainly white sugar, “feed the tumour”. Carbohydrates are an important part of our diet and simple sugar (glucose) is a basic energetic substrate of our metabolism. We receive them particularly from fruit, vegetables, and dairy products. If the intake of carbohydrates does not cover all your body's needs, your body will produce them from certain amino acids, for example, proteins. Therefore, there is never such a lack of carbohydrates that you would be able to starve the tumour. In addition, carbohydrate intake can lead indirectly to a higher risk of tumour development, due to excessive energy supply which in turn results in obesity.

### Diet during cancer treatment

Diet during cancer treatment requires different approaches depending on the type and the progress of the disease. Physical fitness is essential, as well as psychological resilience and the patient's will to manage the treatment well. Sometimes one treatment modality is enough, but usually it is a combination of surgery and chemotherapy or radiotherapy. Anticancer treatment puts a physical and psychological strain on the patient. From a nutritional point of view, the main goal is to maintain a sufficient nutrient and fluid intake so the patient is able to keep her body weight within an optimal, or at least reasonable.

### Getting ready for surgery

The operation is a surgical procedure during which a tumour is removed from the body. The patient needs to cope with the consequences of this removal. The surgery period can be divided into three parts: before, immediately after, and a longer interval afterwards.

Please note that any instruction from your surgeon or members of your medical team takes priority over information which you are now reading in this leaflet.

### Before surgery

The operation is a surgical procedure during which a tumour is removed from the body. The patient needs Preparation for the surgery requires becoming familiar with the planned surgery, information about hospital admission, and the period after the operation. Part of this plan can also be nutritional preparation, which will depend on your Nutrition Risk Screening. Risk factors are, for example, low BMI, undesired weight loss, decreased diet intake or their combination. These risk factors are calculated in a score. If the nutrition risk score exceeds a certain level, the risk is significant and you will need to undergo a 10-to-14-day nutrition preparation regimen.

Its goal is to increase nutrient intake with a diet or artificial nutrition plan (explained in this leaflet under “Artificial Nutrition”) so that your body can get ready for the surgery and the risk of complications is diminished. If your nutritional status is good, you will begin pre-surgery preparation. The preparation differs depending if you need a complete evacuation of your bowel via a liquid diet and laxatives or not.

Bowel preparation lasts the entire day before the surgery. The patient does not eat any solid food after midnight. So if the surgery is scheduled for Wednesday, you will begin Monday at 11:59 p.m. From the



morning before the surgery, you may only drink fluids. Drinking enough liquids is essential in order to tolerate the laxatives, which will be applied that afternoon. The objective of this preparation is to completely clean the bowel from the stool and its remnants. By the end of this treatment the day before your surgery, you should be passing clear fluid. If the fluid is not clear, or you are unable to pass it, you should immediately inform your physician.

### Instructions for bowel preparation

- Do not eat after midnight
- Laxatives will cause diarrhoea, which cleans the bowel; they take effect from 30 minutes up to 3 hours after application.
- After laxatives have been applied, stay close to your toilet and bathroom. Patients often feel nauseous, but if you vomit, inform your physician.
- Try to drink enough liquids, particularly in the evening after using laxatives, to prevent dehydration.
- If bowel preparation is not necessary, you will not be allowed solid food from midnight before the surgery. You can drink clear liquids as late as two hours before the operation. Do not forget to bring a list of the drugs, including food supplements and herbal products, that you have been using. Have a list of your allergies ready (plasters, drugs, disinfection, food, etc.).
- If possible, maintain your accustomed levels of physical activity until the surgery.

### The days after surgery

You will not be allowed to eat or drink right after the surgery. In the course of recovery, this ban is quickly waived, and you will be allowed to resume your diet. An early exercise regime is very important, and an integral part of it is breathing exercises. It is recommended that you begin practising these exercises even before the surgery. Basic physical activities such as sitting, standing up, and walking are allowed as early as you can tolerate them. It depends on the extent of the procedure, but in a typical post-operative course you should be able to get up from your bed without help as soon as 12 hours after the surgery. Slowly increase the intensity of your activity as much as the pain allows you to. Any difficulties in getting up, standing or walking should be reported to the medical team. If pain is an obstacle to rehabilitation, activities should be planned according to the application of pain therapy.

### Physical, dietary, and other regimen measures after the surgery

- Do not lift heavy objects (max. 5 kg).
- Walking is allowed and you may climb stairs.
- Other physical exercise is recommended after consulting with your surgeon or physiotherapist.
- Follow a diet with a limited amount of fibre (stewed and boiled meals are preferred over baked and fried ones); consult your physician or nutrition therapist before resuming your regular diet.
- Do not take a bath or swim.

### The months after surgery

After the surgery it might take a few months—up to a year—until the body adjusts to your new status.

### During and after chemotherapy

Chemotherapy is a treatment that uses cytostatics to treat cancer. Cytostatics are drugs that destroy fast-dividing cells; therefore, tumour cells are sensitive to them. The disadvantage of chemotherapy is in its side effects, particularly on haematogenesis- the formation of blood cells and the functioning of gastro-intestinal tract, and other organ systems.

Chemotherapy is administered in regular intervals, called cycles. In terms of food intake, some side effects (feeling nauseous, vomiting, loss of appetite, discharge disorders, alteration of taste, newly acquired aversions to particular foods) occur regularly after chemotherapy has been administered.

Other issues might last the whole course of chemotherapy. It is important to consult with your physician about your specific problems. During periods of severe or multiple side effects, it is necessary to at least minimise weight loss and maintain minimal physical activity. In the other cycle phases, for example, after chemotherapy is finished, the issues may mitigate and subside. Then, it is necessary to replenish the nutritional deficit and restore your muscle strength thanks to regular physical activity and exercise.





## ISSUES THAT IMPACT NUTRITION

### Loss of appetite and undesired weight loss

Loss of appetite and unwanted weight loss is an unfavourable, but unfortunately frequent phenomenon occurring during cancer treatment. If it is not taken care of on time, it can result in malnutrition. Insufficient nutrition worsens immunity and the healing process. Severe malnutrition can lead to impaired function of important organs, including heart, liver, and the immune system.

#### Suggested measures for improving appetite and maintaining energy

- Eat frequently, at least 5x a day.
- Select meals rich in proteins.
- Eat the largest portions when you are the hungriest.
- Enjoy your favourite high-calorie snacks and have them ready on hand.
- Do not neglect regular physical activity; it will increase your appetite.
- Ask loved ones to help you prepare meals or use social services.
- Contact a nutrition therapist to set up an individual nutritional plan.
- Ask your physician if you need appetite enhancers.

- Do not force yourself to clean your plate. You alone know how much you can eat.
- Avoid a restrictive diet and “blacklisting” foods.

### Sensory changes

Changes in olfactory and taste perception are unfortunately frequent in the course of cancer treatment. In certain cases, they can have a significant impact on food intake.

#### To mitigate changes to your sense of smell and taste

- Choose appetising meals. You might want meals you did not prefer before. Often, naturally sweet meals are well tolerated.
- Try cold meals or warm meals with lower temperatures. You will find they have a less intense flavour and smell.
- Flavours which you do not tolerate well can be covered by something more pronounced. Try herbs and spices, even sharp ones.
- Meals with a high protein content that is crucial during treatment, like red meat, might become less appetising to you. Instead, try eggs, legumes, fish and poultry.
- You might detect a bitter or salty taste even in meals that typically do not have this flavour. When this happens, try sweetening them a bit.
- Brush your teeth and tongue regularly and rinse your mouth after meals. Occasionally use a diluted mouthwash without alcohol. This helps particularly before meals.
- Gargle with a solution of salt and baking soda (add one teaspoon of salt and one teaspoon of baking soda into one litre of water and let dissolve). If you tolerate this solution well and it helps, gargle regularly a few times a day.

### Nausea and vomiting

Feeling nauseous and vomiting is caused mainly by chemotherapy, but also radiotherapy in the abdomen or brain. The main risks of both of these side effects are dehydration and malnutrition due to limited food and liquid intake.

#### To eliminate or relieve nausea or vomiting

- Eat small but frequent portions.
- Try room temperature food and drink; you may tolerate it better.
- Avoid eating fatty, spicy, and overly sweet meals.
- Do not eat foods with strong flavours.
- Drink beverages between meals.
- Sit while eating and leave your head upright at least an hour after eating.
- After vomiting, avoid drinking or eating until you feel well, then slowly try drinking small amounts of clear liquids, unsweetened tea or broth.
- Antiemetics are drugs effective against vomiting and nausea. Use them only as prescribed. If your prescribed antiemetic does not work as expected, inform your physician immediately.
- Try to distinguish between heartburn and nausea because these symptoms have different solutions.

### Fatigue

Fatigue is the most common symptom cancer patients experience. It can be connected with the diagnosis or with the anti-cancer treatment. Having regular meals, physical activity, and rest helps fight fatigue and improve your mood.

#### To relieve fatigue

- Make your life easier temporarily by buying ready meals, semi-finished meals or delivered meals.
- Prepare meals when you feel your best and then keep leftovers in the fridge in meal-size portions.
- Try to drink enough liquid, because dehydration worsens tiredness. Drink at least 8 cups of liquids a day, unless you have a fluid restriction for another reason. Appropriate hydrating fluids are fruit juices, sports beverages, broth or weak tea.

### Difficulty passing stools

Diarrhoea or constipation can be caused by the presence of a tumour or by types of chemotherapy, drugs or radiotherapy in the abdomen and pelvic area. Constipation is a condition in which the stool becomes hard, dry, and difficult to pass. Diarrhoea is the presence of thin, watery stool.

#### To relieve diarrhoeal symptoms

- Drink sufficient liquids such as juices without pulp, sports beverages, broth or weak tea.
- Eat frequent, small portions throughout the day.
- Include food with soluble fibre into your diet (e.g., bananas, white rice, apple cider and white bread).
- Decrease the amount of insoluble fibre in your diet (nuts, seeds, raw vegetables and fruits, whole-grain bread).
- Use anti-diarrhoeal drugs as prescribed. If their impact is insufficient, inform your physician.

Constipation is a long interval between passing stools or difficulty passing stools. Constipation can be a tumour symptom or caused by pain medication.





### To relieve constipation

- Drink beverages like water and fruit juice that decrease constipation.
- Increase the amount of fibre in your diet (wholegrain bread, raw and cooked vegetables, raw and dried fruit, seeds, nuts).
- Consult with your medical team specialists to find the optimal individual solution for you. This may include non-habit-forming laxatives and eating substances that soften stools.
- Increase your physical activity, if possible, by walking and exercising every day. Ask your medical team which exercises are appropriate for you.

### Undesired weight gain

Gaining undesired weight can be caused by hormone-sensitive tumours. Nevertheless, some types of drugs can also contribute to weight gain. Often, insufficient physical activity can be the principal reason.

### To reduce undesired weight gain

- Limit sweets with a high energy content and reserve them for special occasions only.
- Focus on the types of food with a lower energy content that are rich in fibre to make you feel full, for example vegetables, fruit, whole-grain products, and legumes.
- Monitor portion sizes.
- Eat only if you are hungry.
- Exercise. Regular physical activity decreases both fatigue and a tendency to gain weight and makes you feel more optimistic.

### Canker sores in your mouth and throat

Inflammations of the soft tissue (mucosa) lining the mouth and throat are unfortunately a frequent side effect of chemotherapy that causes painful swallowing. Experts call it *mucositis*.

### When painful throat and mouth ulcers occur

- Do not eat dry, crumbly meals or food with sharp edges.
- Avoid alcohol, citrus, coffee, vinegar, and sour meals in general.
- Try meals at various temperatures to discover if you better tolerate warmer food or cold or frozen food like ice cream.
- Drink more liquids and keep the lining of your mouth (the buccal mucosa) constantly moist. Focus on dairy liquids without added acids (you can thin them) and also slightly sparkling beverages and soups and broth.
- Gargle with a solution of salt and baking soda (add 1 teaspoon of both into one litre of water). If you tolerate it well, repeat a few times a day. Please do not swallow this solution; spit it out.
- Consult with your medical team specialists. They can recommend and prescribe drugs to ease your pain and calm the lining of your mouth.

### Low white blood cell count, immunity, and nutrition

Certain chemotherapy regimens cause a drop in the number of white blood cells. This is called neutropenia. When suffering from neutropenia, and also due to the disease as such, the body's immunity weakens and the risk of infection increases. Infectious complications require timely diagnostics and treatment.

Adhering to preventive measures decreases the probability of developing an infection. Being aware of possible symptoms increases the chance of seeking appropriate medical help and starting treatment early. If you think you have an infection, please seek medical help.

### Possible infection symptoms

- Body temperature above 38 °C
- Fever
- Chills
- Swelling and redness of any part of your body

### Preventive dietary measures for patients with neutropenia

- Only eat animal products that have been thoroughly cooked, such as meat, fish, venison, and eggs.
- Always wash vegetables and fruit meticulously.
- Do not eat salads with mayonnaise, delicatessen items or other pre-made cold food.
- Do not drink water from unverified sources.
- If you filter your water, change the filters regularly.

### Food hygiene rules during and after chemotherapy

- Wash your hands with soap and warm water for at least 20 seconds.
- Use a disinfectant solution if water and soap are not available.
- Keep cutlery, cutting boards, and counters clean.
- Change dishcloths and washing sponges often.
- Keep raw meat, eggs, and fish separate from other food.
- Cook meals long enough and at significantly high temperatures (the inner temperature should reach at least 65–75 °C).
- Keep refrigerated or frozen meals wrapped to prevent bacteria growth.
- Set the refrigerator temperature between 2 – 4 °C and the freezer below -16 °C.

## Clinical nutrition and nutritional therapy

Clinical nutrition and nutrition therapy entail medical procedures designed for situations when a regular diet doesn't meet the nutritional needs of a sick patient. These procedures often include assessing the patient's nutritional status, creating an individualised nutritional plan, giving dietary advice, and recommending specialised diet therapy and methods of artificial nutrition.

### The help of nutritional therapist and a physician specialized in nutrition

A nutritional therapist can help you select the right diet when you are an outpatient or receiving hospital care. He or she helps you understand your nutritional status and take care of your nutritional needs. While working to solve your particular needs, a nutritional therapist cooperates with other members of the medical team, mainly your physician and also the physician nutrition

specialist, who is a physician specialising in clinical nutrition and metabolic care.

#### Consult a nutritional therapist when:

- You can't choose an appropriate diet or the current diet is not working.
- You aren't sure what to eat or how much you should eat.
- You worry about your nutritional status.
- You notice unwanted weight loss or weight gain.
- You lose your appetite or feel an aversion to eating.
- You have trouble with the act of eating and swallowing.
- You have bowel issues that occur in connection with eating.
- You don't have enough information about the right way to eat and prepare meals.



## Frequently Asked Question No. 4

### Is it true certain fruit and vegetables are not suitable during chemotherapy, for example, grapefruit, broccoli or soya? If so, where can I find a list of them?

In general, if your physician or pharmacist does not alert you to a theoretical problem, there is no need to limit yourself in fruit and vegetable consumption when you suffer from neutropenia that might be connected to chemo. However, grapefruit and some other citrus fruit, when eaten in large amounts, really can influence the metabolism in the liver of specific drugs, including some types of chemotherapy. This situation is, however, very rare, and it always depends on the specific situation and quantity of citrus consumed. It is always advisable to ask your physician about your specific case.

### Artificial nutrition

Artificial nutrition is intended for situations when regular food and specialised diets are unable to cover your nutritional needs. It can be taken orally (as a drink, sometimes this is called sipping) or in the form of a liquid or cream supplement. When food cannot be consumed orally but the gastrointestinal tract functions well, artificial nutrition is administered through a fine tube (probe) directly into the stomach or small intestine (enteral feeding). And for those patients whose intestines do not work sufficiently and for whom eating is technically not possible, we can offer specialised intravenous (parenteral) nutrition directly into the bloodstream.

Artificial nutrition is indicated only for situations when its advantages outweigh the risk of complications from malnutrition, which is connected to inappropriate or insufficient nutrients taken in from the regular diet. Often it is possible to combine a regular diet with an artificial one. We always prioritise maintaining the natural functions of nutrient intake and processing them through the gastrointestinal tract. Your medical team is ready to help you handle artificial nutrition if necessary.

#### Frequent reasons for artificial nutrition

- Weight loss or dehydration
- Problems with swallowing
- Loss of appetite or aversion to food
- Insufficient intestinal function (vomiting, diarrhoea, large stoma volume)



## The importance of physical activity

As mentioned above, physical activity is essential for your health and in the prevention of a high number of diseases, including cancer. Regular physical activity not only has a positive impact on your health, but it can be a source of joy and a part of your social life. During a severe disease, sufficient exercise is of higher importance than when you are healthy. It becomes an essential component of your healing. Maintaining or starting regular physical activity is not easy because fatigue and other symptoms make exercise even more strenuous. Still, it is worth the effort. Once you start, you will feel stronger and will gain new energy necessary for the treatment process and healing. The long-term benefit of regular exercise can be seen in practically all organ systems, starting with greater muscle strength and bone-endurance as well as helping the circulatory system (better blood supply) and the central nervous system (better spirits). Physical movement influences hormonal and inflammatory activity in your body and improves the utilisation of nutrition for tissue renewal and wound healing.

### Advantages of regular exercise

- Less likely to gain unwanted weight
- Better quality of life
- Opportunity for shared enjoyment when you exercise with friends
- Better mood

### Starting physical activity during oncological treatment

- Ask your physician, physiotherapist and other care team members for information about appropriate types of physical activity for you.
- Start slowly. Increase the length and intensity of exercise little by little.
- Start with ordinary daily activities. Accept offers of help only in a necessary extent and necessary time frame.
- Focus on simple exercises. Ideally, you'll learn these from a physiotherapist at the beginning of your treatment and can repeat them a couple of times a day on your own. Frequent, short bursts of exercise are better because you don't tire yourself too much.
- Take short walks or bike rides on safe terrain at the beginning. These are ideal!
- Do not be shy. Set up a rehabilitation plan with a physiotherapist.
  - ➔ Choose an activity that brings you joy
  - ➔ Set up a realistic plan
  - ➔ Specify a reward when you accomplish your goal
  - ➔ Keep records
  - ➔ Find a friend to join you
  - ➔ Don't stress if you do not succeed immediately
  - ➔ Celebrate your results and share them with friends and family

## SUMMARY

We believe this leaflet will help you follow our recommendations in terms of the nutrition, adequate physical activity, and reliable communication with your medical team necessary for your best care. Remember that your psychological state is equally as important as your physical health. Keep in mind that nowadays, thanks to progress in treatment modalities, the majority of patients are cured or stabilised with a very good quality of life in the long term. At the same time, it is important to accept the disease with a certain humility and to fight for a cure.

Things that may help you in keeping a positive frame of mind are paying attention to your appearance (even if you feel the disease has taken a toll on your looks), maintaining relationships, and accepting the interest and efforts of your loved ones. While you might feel shy, do not shut yourself in at home, because communication with friends helps. If possible, keep attending cultural and other social events. If you are not sure which activities are allowed from a medical viewpoint, ask your physician. There is no need to conceal your disease from the world—set an example and inspire others with your attitude.





*This brochure has been kindly reviewed by Bruno Raynard,  
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