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## EMERGENCY CASES

Situations when it is necessary to urgently consult a doctor without waiting for an appointment:

- body temperature rise more than 38 degrees;
- ☑ bleeding, heavy bleeding from nose, gums;
- bruises on the skin (with the exception of bruising after a hurt) bleeding from the vagina, which is not menstrual;
- mew blood in the stool or black tar-like feces, blood in urine;
- vomit of coffee ground or red, blood color;
- bleeding and blood when coughing (blood streaks in sputum do not matter);
- pain and redness at the place of the vein into which cytostatics were injected (changing the color of the vein to brown during chemotherapy does not matter);
- $\blacksquare$  pain in the chest, which may irradiate to the arm;
- if gases do not go away and you cannot go to the toilet for more than3 days (if it is not the norm for you);
- sudden numbness, double vision and coordination dysfunction, loss of consciousness;
- ✓ frequent diarrhea more than 6-8 times a day or its duration longer than 2 days.

## **Dear patient!**

If you are reading this guide, most likely you or your closed one is undergoing antineoplastic therapy. We understand that it is a difficult challenge that requires physical and psychological resources and raises many questions. We have prepared this guide to help you find answers to the most common questions that arise during one of the most important stages of anticancer treatment chemotherapy. And the first recommendation: we do not advise to discuss the treatment with other patients in the corridors and offices, and look for answers to questions on the Internet. Remember your individuality! You receive personalized treatment for your particular disease, with regard to individual characteristics and according only to your treatment plan. Discuss any questions with your doctor. Recommendations obtained from unchecked sources may be false and pose a health risk. In patients who are informed about the treatment prescribed to them, adaptation is much easier, and, accordingly, the treatment result is more successful.



## What is chemotherapy?

## Chemotherapy - a method of drug therapy for malignant tumors, using special drugs (cytostatics)

It is a systemic treatment that penetrates almost to all organs and tissues. Cytostatics act primarily on actively dividing cells, which include tumor cells. However, in addition to them, normal cells are also actively renewed and divided: skin, hematopoiesis and gastrointestinal mucosa cells. Therefore, chemotherapy may cause various complications: skin changes, hair loss, anemia, thrombocytopenia, leukopenia, stomatitis, vomiting and diarrhea.

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## What chemotherapy is for and are there other treatment methods?

In oncological diseases, combined treatment is most often used. This means that chemotherapy is used as one of the treatment stages along with surgery and/or radiation therapy. However, in some cases, drug treatment is the only method that can be used. The tactics depends entirely on the goals of treatment.

### What is necessary to safely complete the entire therapy?

- A positive attitude to your condition, an objective assessment of your disease and people around you during treatment are no less important than the treatment you are taking.
- ✓ If you do not lose hope, you are calm and patient, then the immune system will remain strong, and you will be able to overcome the disease much easier, and feel less side effects of the therapy.
- Remember that most side effects are temporary.
- ✓ In difficult moments, do not hesitate to ask for help or ask questions to your closed ones and the doctor.
- ☑ If you get tired quickly, reduce your works and physical activity.
- At a time when you feel well, you can, to the best of your ability and subject to permission from your doctor, return to work and family life.
- Do not break contact with your closed ones, the chemotherapy drugs you are taking are harmless to others, including children.
- Keep a balanced diet. Food contributes to the body self-healing and gives energy.
- Never violate the treatment regimen. In no case do not miss days of therapy sessions, unless emergency cases.
- ✓ When you come to the doctor, with the excitement and fuss you may forget the questions you were going to ask. Therefore, write down the questions that concern you and ask your doctor during consultation.
- Before you leave the hospital, do not forget to get a prescription for medicines, doctor's recommendations, which are necessary in case of side effects at home.



# How can the ability to have children (fertility) change after completion of anticancer drug therapy?

Fertility is the ability of a man or woman to reproduce offspring. Many types of anticancer treatment can interfere with the future fertility. The majority of men cured of tumors experience reproductive disorders, a decrease or disappearance of sperm activity and viability, often leading to infertility. In women, anticancer drug therapy interferes with ovarian function, normal menstrual cycle changes, or menstruation may stop completely. Depending on the drug administered and its dose, temporary or permanent infertility may occur. Changes may occur in the hormonal balance that can cause symptoms similar to menopause: hot flashes, sweating, vaginal dryness. If you are of childbearing age, you should consult with your doctor about possible impact of treatment on fertility before starting it during planning anticancer therapy. Currently, there are methods with a high probability of maintaining fertility even in patients who have undergone intensive antitumor therapy.

In men, chemotherapy reduces sperm count and can cause temporary or permanent infertility. There were no negative effects on sexual functions and desire. The method of cryopreservation (freezing) of sperm is used. Long-term storage of frozen sperm does not affect the fertilizing capacity of spermatozoa, therefore sperm cryopreservation allows a man to have his own child after the treatment. For women, cryopreservation of ovarian tissue, egg or embryo is used. Further information can also be obtained from a fertility specialist majoring in fertility preservation for cancer patients.



## What is the role of psychological help and is it possible for me to receive it?

The psychological component is an important part of the treatment process. The main goals of psychological correction are not only improving the emotional background, reducing stress levels, psychological preparation for the upcoming treatment process, but also teaching self-regulation skills. To get psychologist's consultation, contact your doctor.

### Hence, drug therapy can be used to:

- ✓ completely cure;
- reduce the tumor size before surgery or radiation therapy (preoperative or neoadjuvant chemotherapy);
- reduce the likelihood of the disease re-development due to the impact on hypothetically remaining malignant cells in the body after tumor removal (postoperative or adjuvant chemotherapy);
- ✓ control the tumor growth and symptoms accompanying its growth when it is not possible to use radical treatment methods - surgery or radiation therapy (palliative chemotherapy).



# How long the treatment lasts and how often the drugs are administered?

The treatment duration depends on the stage and combativeness of the disease, the treatment objectives, the tumor sensitivity to chemotherapy, as well as the regimen and scheme of chemotherapy. Patient can receive cytostatics daily, weekly or monthly. Chemotherapy itself is a course of treatment. Typically, a course includes 6-8 chemotherapy cycles, but it is determined individually. The most commonly used treatment regimen is "every 21 days cycle". The cycle includes the period of direct use of drugs from the very first day and a break between their use. The break between injections of cytostatics, which lasts an average of 3 weeks, allows the body to build new healthy cells, recover strength and prepare for the next cycle of the treatment.



### Where and who perform chemotherapy?

Chemotherapy is performed only by an experienced oncologist, chemotherapist who has sufficient experience in such treatment. The treatment is carried out in a specialized institution, on inpatient or outpatient basis.



## How are chemotherapy drugs selected?

The selection of drugs is carried out by an oncologist depending on the type of tumor, its severity, the patient's age, general condition and other concomitant diseases (cardiovascular system diseases, diabetes mellitus, kidney and liver diseases). Taking into account these factors, the oncologist prescribes appropriate doses and frequency of using the selected drugs in accordance with the protocols for the diagnosis and treatment of malignant diseases. The drug dosage is calculated by total body area (weight-for-height ratio).



## How is chemotherapy performed?

Possible routes of chemotherapy drugs administration:

- intravenous (droppers);
- ✓ per os (capsules, tablets);
- or in the body cavity (intraperitoneal, intrapleural, etc.).



# Is it possible to have an intimate life during chemotherapy?

When a patient has been diagnosed with a "malignant tumor" diagnosis and is about to undergo anticancer therapy, he needs the closeness and support of a loved one more than ever. Patients undergoing chemotherapy can freely have sexual life. However, the treatment takes a lot of energy, so there are often no opportunities for an intimate life. Because of chemotherapy there may be decrease in libido, dryness of mucous membranes, including the vaginal mucous membrane. In this case, patients can consult with andrologists (for men) or gynecologists who deal with disorders of sexual function or desire. Chemotherapy drugs can be found in sperm and vaginal discharge. Therefore, within 48 hours after taking cytostatics, it is recommended to use a condom. At the same time, it is extremely important to understand that all cytostatic anticancer drugs have a damaging effect on the conception and pregnancy. If you are fertile, avoid pregnancy or conception during the entire course of cytostatic anticancer therapy, use contraceptives.







# Should I avoid contact with people while undergoing treatment? Am I contagious?

No, you are not contagious. You should not avoid contact with people around you. But remember that most chemotherapy drugs weaken the immune system, so you should avoid contact with people with infectious diseases, as the infection risk is increased. Wash your hands frequently, especially when in public places, before preparing food, and before touching your face, nose, mouth, and eyes.



## Can I work during treatment?

Depending on the general condition, you can continue to work. Many patients continue to work if they feel satisfactory during treatment. Moreover, going to work allows you to distract yourself from ongoing therapy, helps you return to your usual lifestyle, and feel needed.



## What to eat while undergoing chemotherapy?

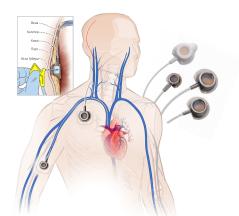
One of the main conditions for prescribing and conducting antitumor drug therapy is the good general state of the patient, which, of course, depends on proper nutrition. Of course, due to information overload after visiting an oncologist, not all patients are ready to pay attention to dietary nutrition and lifestyle changes during treatment. However, you need to understood that keeping a balanced, rational diet helps to more easily resist the treatment side effects. If there is no gastrointestinal diseases (including diarrhea or constipation due to anticancer therapy), it is recommended to follow the Mediterranean diet, which, according to major epidemiological studies, has a positive effect on the risk of development and course of oncological diseases. This diet should include low-fat, high-fiber foods, fruits, vegetables, olive oil, fish, lean meat, poultry, whole grains, beans, and lentils. Give preference to seasonal fruits and vegetables. When eating protein food, fried and smoked dishes should be avoided. Additional nutritional support (nutritive supplementation) is necessary not only to maintain the body metabolic reserves, but also to increase its resistance to the treatment (drugs, surgery, radiation therapy). Currently, there is no evidence of a stimulating effect of long-term artificial nutrition on the tumor growth. Nutritional support should begin simultaneously with the start of anticancer treatment and correspond to the patient's condition at each stage of treatment and rehabilitation.



# How are chemotherapy drugs administered intravenously?

Intravenously administered chemotherapy drugs are generally injected at different frequencies through a dropper in the form of a drug solution. To prevent side effects of some drugs during therapy, patient may need to drink plenty of fluids.

If the veins are fine or tender, as well as if long-term treatment is planned, which involves using drugs with hours-long or days-long



administration, you should consult your doctor about installing a subclavian port system. This device is completely implanted under the skin of the anterior chest wall for a long time, up to many years, and provides constant access to the necessary vessel. During the period of using the port system, the device itself is practically not felt, which allows to keep a normal lifestyle without denying yourself, including sports.



### How is tableted chemotherapy applied?

Sometimes chemotherapy is prescribed in tableted form, which can be taken at home, on outpatient basis. In this case, it is necessary to understand well how to take these drugs, check with the doctor if something is not clear. If you have side effects that prevent you from taking medicine, immediately contact your doctor and ask for help.

Remember that medicines taken at home are also as important as intravenous drugs given in hospital, which, if taken insufficiently or incorrectly, can affect the treatment results and be unsafe.

# PRecommendations for the safe storage and use of chemotherapy drugs in tableted form:

Keep the drugs out of the reach of children and pets.



- Most medications should be stored at room temperature in a dry, cool place, and some need to be stored in refrigerator. Consult with your doctor about the correct temperature regime for storing medicines.
- Keep medicines in their original packaging or box.
- ✓ Wash your hands thoroughly before taking medication.

# What is chemotherapy in the body cavity (intracavitary)?

Depending on the disease expansion degree and its localization, chemotherapy drugs can be injected into the abdominal cavity, pulmonary pleura, bladder, and liver. Such procedures must be carried out in a hospital and under doctor's control.

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# Is it allowed to take other medicines during chemotherapy?

Chemotherapy is not a contraindication for taking medications associated with other concomitant diseases (diabetes mellitus, arterial hypertension, heart diseases). However, it is necessary to consult with the doctor about taking these drugs. When hospitalized, bring medications that you take regularly.

Upon hearing that you are being treated for cancer, relatives and friends may advise you to take vitamins and dietary supplements. Such recommendations are often exaggeratedly provided by the mass media: magazines, television, the Internet. Unfortunately, they mostly contain incomplete and inaccurate information. The main arguments of traditional medicine are that natural products are safe and healthy. But some herbal products can react with chemotherapy drugs, which can lead to a decrease in the treatment effectiveness and an increase in side effects, and as a result, negative consequences. If you intend to receive or are already receiving such type of treatment, you must tell your doctor about it.



## **GENERAL RECOMMENDATIONS**

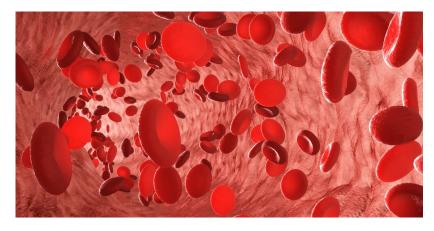
What happens if I miss one or more doses of the drug? What happens if I miss one or more cycles of the therapy?

Missing treatment session is undesirable. Anticancer drug therapy is a cyclic treatment, and breaks between courses provide an opportunity for healthy cells to recover. What happens if I miss one or more doses of the drug? But if you miss the next injection of the drug, not only healthy cells, but also malignant ones can recover. This determines the interval between courses. If a few cycles are missed, tumor cells can develop resistance to anticancer drugs that were previously administered. In some cases, the next administration of drugs may be delayed for several days. This decision is made by the attending physician if he thinks that the body has not recovered enough from the previous chemotherapy course and the risk of complications from continued treatment exceeds the expected benefit. More often, this decision is based on the results of blood tests. It is important to remember that if you miss the morning dose of oral cytostatics, then you should not increase the dose of the evening dose, and vice versa. Any changes in the treatment regimen are possible only after agreement with the attending physician.

mucosa), use a foam toothbrush; avoid physical activities that can lead to injury; if you need to blow the nose, do it very carefully. Peach oil can be used to remove crusts from the nose; avoid enemas, rectal suppositories; be careful when using the iron and cooking, so as not to burn yourself; for cuts, apply compressing bandages and keep them on until the bleeding stops; do not drink alcohol.

For an early detection of hematological complications, provision of timely medical care to a patient receiving chemotherapy, in case if the following symptoms appear: body temperature rise above 38.0 C, severe weakness, diarrhea, stomatitis, etc., if changes in blood counts are detected, consultation with the attending physician is necessary. In the event of a high toxicity degree and other adverse events, hospitalization in a round-the-clock hospital may be required to provide intensive care. The start of the next chemotherapy cycle is possible only after the normalization of blood counts providing a satisfactory condition of the patient.

In connection with the ongoing chemotherapy, timely monitoring of the vital organs and systems is very important. This control is performed using laboratory (biochemical parameters) tests such as urea, creatinine, alanine aminotransferase (ALT), aspartate aminotransferase (AST), glucose, etc инотрансфераза (АЛТ), аспарта-таминотрансфераза (АСТ), глюкоза и др.





### What are side effects of chemotherapy?

The more severe the tumor, the higher the expected effect of chemotherapy. However, chemotherapy drugs cannot selectively damage only tumor cells. Symptoms associated with damage to healthy organs and tissues are called side effects of chemotherapy.



## Nausea and vomiting

Nausea and vomiting are common side effects of chemotherapy. The intensity and duration of vomiting depends on the drug and dosage. It can occur immediately after therapy session or in 8-12 hours. Patients who receive chemotherapy for a long time may experience psychogenic vomiting. In order to reduce the risk of nausea, doctor prescribes antiemetic therapy before administration of anticancer drugs. Doctor will prescribe one or several drugs that have antiemetic effect, depending on the type of therapy and the tolerability of the previous treatment.

#### Measures that can be taken:

- ☑ Do not dispose yourself for the fact that after each chemotherapy you will have nausea and vomiting.
- ✓ If vomiting occurs during chemotherapy session, do not eat for 1-2 hours before and after the procedure.
- Eat in small portions, 5-6 times a day, instead of the usual 3 times, slowly, chew food well.
- Avoid eating fatty, sweet, fried foods. If you feel sick at the smell of food, then give preference to cold and warm food.
- Avoid irritating toilet, perfume, cigarette and food odors.
- ✓ If vomiting occurred while lying in bed, immediately turn your head on one side so that the vomits do not get into the airways.
- ✓ If you have a car sickness, do not plan long trips on the day of chemotherapy session.
- Sour products (lemon, cranberries, marinade), pickles can reduce nausea. To suppress unpleasant brassy taste of the drug, it is recommended to chew sour and mint flavor sweets.

- During periods of nausea, do breathing exercises, breathe slowly and deeply.
- A piece of ice or a frozen slice of lemon can reduce nausea.
- ✓ Inform your doctor about the intensity, duration and frequency of nausea and vomiting if it lasts for 3-4 hours or more than 3 times a day.

## · ) Hair loss

Hair loss (alopecia) is not a threat to the body and leads more to psychological trauma in women, who, unlike men, are more susceptible to significant changes in appearance. The intensity of hair loss is directly related to anticancer drugs used. As a rule, 2-3 weeks after the start of treatment, there is some discomfort in the scalp, after which the hair begins to fall out, evenly or immediately in whole tufts. Hair loss occurs in all parts of the body, but they grow back after the end of chemotherapy. Full hair regeneration occurs 2-4 months after the end of treatment. In some cases, hair may become wavy and even change color.

#### Measures that can be taken:

We recommend a bob haircut or shave before a significant amount of hair is lost on the head. Go to specialized stores in advance to choose a wig to the color and length of your existing hair, or make a wig from your own hair.





### Why it is recommended to take blood tests so often? What is hematological toxicity?

Before the next cycle of chemotherapy, it is necessary to take clinical and biochemical blood tests, which will help the doctor to understand the performance of bone marrow and main body systems. In most cases, chemotherapy drugs reduce the bone marrow activity, disrupting the ability to produce blood cell counts: erythrocytes, leukocytes, platelets, this is hematological toxicity.

Erythrocytes are red blood cells containing hemoglobin, which performs the oxygen transfer function. With a low hemoglobin content, you may feel weakness and dizziness. Skin paleness is noted. Have plenty of rest, avoid heavy physical exertion. Include iron-rich foods such as liver and red meat, and fiber-rich green vegetables in your diet. Fresh air will also help: walks, sleep with open windows.

Leukocytes are white blood cells - "guards" that stand guard over our body and perform a protective function. With a low content of leukocytes, the likelihood of infection development increases. The source of infectious diseases can be bacteria and viruses that are both inside the body and in the environment. Recommendations: Wash your hands frequently throughout the day, especially before meals and after going to the toilet; avoid visiting crowded places: public transport, markets, meetings; do not communicate even with close people if they have signs of infectious diseases, for example, influenza, SARS, etc.; after defecation, gently and thoroughly wash the anal area; carefully cut nails and burrs; avoid cuts and be careful; do not squeeze out acne (pimples); take a shower daily; instead of rough wiping, blot the skin with a towel; if skin is dry, use creams (moisturizing, for children); in case of a cut, wash the affected area with soap and water and use an antibiotic ointment.

Platelets - play an important role in the bleeding control. When blood vessels are damaged, they accumulate at the site of injury, forming a blood clot that prevents bleeding. The main danger that can occur with a decrease in platelets is bleeding. Pay attention to unexpected bruising, bleeding from the nose or gums. If black stool appears, as well as spontaneous bruising and bleeding, contact your doctor immediately. To prevent bleeding when platelets are low: do not take aspirin or aspirin containing medicines; use a soft-bristled toothbrush to avoid hurting qums. In case of stomatitis (inflammation of the oral

- Pay attention to redness and cracks around the anus and inform the doctor about your condition.
- Regularly take medicine for diarrhea recommended by the doctor.

## ) Constipation

Constipation is a decrease in stool frequency in comparison with the norm, hardening of feces, painful and distressing bowel movement. If there is no stool for more than three days in addition to the use of laxatives, an enema should be given.

## What can be done to prevent constipation?

In order to normalize the stool, in addition to taking laxatives, it is recommended to:

- increase motor activity;
- drink more fluids, in the morning it is worth drinking a glass of cold water or juice on an empty stomach;
- eat more high-fiber foods: fruits, grains, and vegetables; include kefir, yogurt, prunes, figs, plum juice, boiled beets in the diet;
- eat first courses: soup, borshch, cabbage soup;
- $\blacksquare$  add bran to food (up to 4-6 tablespoons per day);
- $\mathbf{\overline{M}}$  try to eat at the same time.



## **Excessive sweating**

Sweating is an increased loss of fluid by the body, not associated with an increase in air temperature, which occurs mainly at night. Control whether you had a temperature before excessive sweating.

#### If you have an excessive sweating

- $\blacksquare$  put on a second layer of clothing to absorb sweat;
- oxdot change wet clothes often;
- ✓ keep the bed always dry;
- ☑ take a shower often;
- $\blacksquare$  the room should not be too cold or too hot.

## What can be done to reduce hair loss?

- ☑ In order to reduce hair loss, the best thing is to use mild herbal shampoos with normal pH, rinse well and dry gently.
- $\blacksquare$  Instead of a comb, it is better to use a brush with soft bristles.
- ☑ It is not recommended to use a hair dryer, if necessary, set the temperature of the hair dryer to the minimum level.
- ☑ It is not recommended to dye hair, do hair perming, and use hair spray and other chemicals.
- You can sleep on soft pillows, use satin pillowcases to ensure maximum comfort during sleep and reduce hair friction on the fabric.



## Faintness

Faintness is one of the most common side effects of anticancer drug therapy. Faintness is sometimes confused with fatigue. Fatigue usually occurs after certain activities by the end of the day, and good sleep helps to solve this problem. Weakness caused by general body intoxication during antitumor drug therapy cannot be corrected by sleep. It may last not long, but it may take several days or weeks.

### The following measures can help to combat faintness:

rest longer and more often, taking short but frequent breaks in work;



- $\mathbf{\boxtimes}$  reduce the duration of work;
- $\mathbf{i}$  do only what is really necessary;
- eat well, drink plenty of fluids (at least 2 liters per day).

## ) Damage to the skin and mucous cover of the body

Problems with the skin cover may occur during drug therapy, for example, rash, itching, peeling, redness. Hygiene and skin care are essential. Do not take a bath, it is better to take a shower. It is recommended to take a shower daily. Do not use alcoholic lotions; creams and lotions for dry skin are more suitable. The sun rays enhance the toxic effect of certain drugs on the skin, so it is not recommended to sunbathe. Use sunscreen when in the sun. Wear long sleeves, preferably cotton. When doing household or garden work, use gloves to protect the nails and skin on the hands. To prevent damage to the mucosa it is recommended to rinse the mouth with water or camomile decoction after each meal.

#### Measures necessary for oral care:

Measures necessary for oral care: Before starting chemotherapy, it is advisable to consult a dentist to diagnose your teeth for caries and stomatitis. The tooth brushing procedure is obligatory, for which it is recommended to use toothbrushes with soft bristles. Brush your teeth after every meal and before bed.

Keep the lips moist by lubricating them with vaseline or cream to prevent them from drying out and cracking.

- Eat soft foods (baby food, mashed potatoes, cereals, omelet, cheese, pasta, bananas, apple sauce, etc.).
   Solid and dry food should be preliminarily softened in liquid; add broth, oil or mild gravy to dry food.
- Eat room tempered food.
- ✓ Do not eat acidic and irritating foods (tomatoes, citrus fruits, marinades), do not eat spicy and salty foods, do not drink alcoholic beverages.

If you use a prosthesis, make sure it fits. After each meal, remove your dentures and keep them in a covered container with water, changing the water in the container daily.

In case of pain due to inflammation of the oral mucosa and gums or a decrease in platelet level of less than 20 thousand cells (according to a clinical blood test), use special foam brushes and frequent rinses.

It is recommended to rinse the mouth using furacilin solution (chamomile decoction, oak bark) in the daytime every 2 hours, and also use dental gels (Kamistad, Metrogyl Denta) for oral mucosa twice a day. Do not use mouthwashes containing alcohol and glycerin.

✓ If you use a prosthesis, make sure it fits. After each meal, remove your dentures and keep them in a covered container with water, changing the water in the container daily.



## Diarrhea

During a chemotherapy course, there may be changes in the regularity of bowel emptying. If the stool is more than 3 or 4 times a day, it is very soft or liquid, then this is called diarrhea, so you should contact your doctor at the first signs.

#### What to do during diarrhea?

- Control how many times a day you go to the toilet, what color and consistency is the feces, so that you can tell your doctor this information.
- ☑ Do not eat high fiber foods, which can irritate the digestive system. Such foods are (raw vegetables, bran and wholemeal bread, fresh and dried fruits, chocolate, garlic, pickles.
- Drink at least 3 liters of liquid, in addition to water, consume meat broth, rice water, jelly.
- Eat high-calorie and potassium-rich foods: rice, noodles, white bread, white chicken and turkey meat, or lean fish, bananas.
- ☑ Wash your anal region with soap and warm water after each stool.