

UNDERSTANDING  
AND MANAGING

# Chemotherapy Side Effects

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# Understanding and Managing Chemotherapy Side Effects

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*With better control of side effects from chemotherapy, treatment is going more smoothly for many people with cancer.*

**The goal of chemotherapy is to destroy cancer cells.**

Traditional chemotherapies work by killing cells that divide rapidly. But as they wipe out fast-growing cancer cells, they also can damage fast-growing healthy cells.

Damage to healthy blood cells can lead to side effects such as fatigue or infection. Chemotherapy can also damage the cells that line mucous membranes throughout the body, including those inside the mouth, throat and stomach. This can lead to mouth sores, diarrhea or other issues with the digestive system. And damage to cells at the hair roots, or follicles, can lead to hair loss.



Each person with cancer reacts differently to chemotherapy and its potential side effects. Fortunately, doctors now have ways to reduce and even prevent these side effects. In this booklet, you'll find practical information on managing side effects from chemotherapy so that your treatment goes as smoothly as possible.

To help you get relief, your doctors and nurses need to know specific details about your symptoms. By keeping a side effects journal and bringing it with you to medical appointments, you will have this kind of information ready to share with your health care team. Some of the things you may want to write down in your journal include:

- The date and time a side effect occurs
- How long it lasts
- How strong it is—for example, if you experience pain, how strong is it on a scale from 1 to 10, with 1 being the least amount of pain and 10 the most intense?
- How your daily activities are affected—did any side effect of your medication keep you from sleeping, eating, walking, working or exercising?
- Any other questions or concerns that come up between appointments with your health care team

Good communication with your doctors and nurses is especially important if you decide to take part in a clinical trial. Clinical trials are studies that test new treatments to see how safe and effective they are for patients.

Your doctor, who knows the most about your specific type and stage of cancer, can guide you in making a decision about whether a clinical trial is right for you.

# Chemotherapy-Induced Nausea and Vomiting (CINV)

**When chemotherapy enters the body, sensors in the digestive system and brain detect its presence as a foreign substance.**

In a complex series of signals among the brain and the mouth, stomach, small intestine and bloodstream, the medication stimulates the “vomiting center” in the brain. Several chemicals, including ones called serotonin and substance P, are released, triggering the nausea and vomiting reflex. This is the body’s effort to get rid of the foreign substance.

Some people experience nausea and vomiting side effects from chemotherapy within the first few hours of receiving chemotherapy. Doctors call this reaction “acute nausea and vomiting.” Other patients don’t feel symptoms the day of chemotherapy but may develop nausea and vomiting during the next few days. This condition is called “delayed nausea and vomiting.”

You shouldn’t assume that nausea and vomiting that occurs a day or two after treatment isn’t related to chemotherapy. It’s important to tell your doctor or nurse when you experience these symptoms, no matter when they occur.

Because some people getting chemotherapy expect to feel ill, they may start experiencing symptoms even before their treatment begins. This is referred to as “anticipatory nausea and vomiting.” Sometimes, the sights, sounds or smells of the treatment room can trigger this reaction.

## Treating Nausea and Vomiting

There are anti-nausea medications that your doctor will decide to prescribe based on the type of chemotherapy you are getting and how much nausea and vomiting might be expected. Sometimes, patients receive anti-nausea drugs intravenously (through a needle inserted into a vein). Other anti-nausea medications are available in pill or liquid form to take by mouth, as a skin patch or as a suppository (a soft cone—or cylinder-shaped capsule containing medication that dissolves in the rectum).

After chemotherapy, you may also be given anti-nausea medications to take at home. It’s important to understand how these drugs should be taken. To prevent CINV, some medications are designed to be taken for several days, whether you feel nauseous or not. Others are meant to be taken only when you feel nauseous. If you have questions about when you should take your anti-nausea medication, be sure to call your doctor or nurse.



It is vital that you have a clear understanding of the order in which you take your medications—both chemotherapy (whether intravenously or by mouth) and anti-nausea drugs—as well as the times at which you take them.

If you are taking the medications as directed and you continue to have CINV, contact your doctor right away. It's very important to stay hydrated (keep fluids in your system) so that the body's salts, or electrolytes, stay in balance and the cells can work properly.

Generally, anti-nausea drugs fall into the following categories:

**Corticosteroids.** Corticosteroids, which are related to the natural hormone cortisol, are widely used to help prevent nausea and vomiting caused by chemotherapy. They have been successfully used for many years, especially to prevent delayed nausea and vomiting. Corticosteroids such as dexamethasone (Decadron, Hexadrol and others) can be given in different forms and are often combined with other anti-nausea drugs for maximum benefit.

**Serotonin antagonists.** Serotonin antagonists are often used to counter nausea and vomiting resulting from powerful chemotherapy drugs such as cisplatin (Platinol and others) and cyclophosphamide (Cytoxan, Neosar and others). Serotonin antagonists stop serotonin (a substance occurring naturally in the brain) from sending a signal that causes vomiting. These drugs are usually administered intravenously before chemotherapy begins.

One of these drugs, palonosetron (Aloxi), continues to work for days after a single injection. It can prevent both acute and delayed nausea and vomiting. Other serotonin antagonists include ondansetron (Zofran and others), granisetron (Kytril), and dolasetron (Anzemet). Like palonosetron, dolasetron is given

as an injection. Ondansetron is given in tablet or liquid form, and granisetron is given either via an injection or in tablet form.

**Dopamine antagonists.** Metoclopramide and prochlorperazine are two commonly used medicines in this class of drugs. They are often prescribed for “breakthrough” nausea and vomiting—that is, symptoms not already controlled with other types of medications.

**NK-1 inhibitors.** Aprepitant (Emend) works on the vomiting center of the brain to prevent nausea and vomiting caused by chemotherapy. It blocks the action of substance P, a peptide that triggers nausea and vomiting reflexes. Aprepitant is sometimes given in combination with corticosteroids and serotonin antagonists. It is available as a capsule, and is taken before a chemotherapy session and for two days afterward.



**Cannabinoids.** These medications contain a purified form of the active ingredient found in marijuana. For a number of years, doctors have prescribed dronabinol tablets as an anti-vomiting drug. In 2006, the U.S. Food and Drug Administration approved nabilone (Cesamet) tablets, which can control CINV in cancer patients who have not been adequately helped by other anti-nausea medications. Like marijuana, dronabinol and nabilone can cause sedation (relaxation or sleepiness) and mood changes. Read CancerCare’s fact sheet titled, “Medical Marijuana and Cancer” for more information.

**Anti-anxiety drugs.** Medications such as lorazepam (Ativan and others) or diazepam (Valium and others) are used to help block nausea and vomiting. These sedatives (from the benzodiazepine family of medications) can be given intravenously and in pill form. To avoid becoming dependent on such medications, a careful schedule should be worked out with your doctor or nurse. They can also effectively relieve the anxiety that people can feel when they believe they’re about to experience these symptoms.

## Coping With Nausea and Vomiting

In addition to medical treatments for nausea and vomiting, there are things you can do to ease symptoms. For example:

- Eat and drink slowly. Try having small meals throughout the day instead of a large breakfast, lunch and dinner.
- Avoid sweet, fried or fatty foods, as well as foods with strong odors. Eating foods cold or at room temperature can help you avoid strong smells.
- Be sure that you fully understand your doctor’s and nurse’s instructions for taking anti-nausea medicines.
- Wear loose-fitting clothing that doesn’t bind or add stress to your body.

- Rinse your mouth often to eliminate any bad taste. Use a solution made up of one quart of plain water, half a teaspoon of table salt and half a teaspoon of baking soda. It’s important to maintain good oral care, and rinsing is part of that.
- Try ginger to help relieve nausea. Sipping on ginger tea may be effective, as well as eating ginger lollipops or drops.
- Be sure that you are drinking enough fluids. Drinks that provide important electrolytes include Gatorade and Pedialyte, an over-the-counter solution made for infants that can be used by adults as well. If you find you cannot drink enough water and other fluids, your doctor may prescribe intravenous (IV) fluids.
- Ask your nurse or doctor about proper nutrition, which is especially important during this time. Your health care team can recommend a registered dietitian to help guide you on food and health.
- Avoid eating your favorite foods before chemotherapy so you don’t associate them with chemotherapy in the future.
- Find out from your doctor if any other medicines you may be taking require special precautions.



# Fatigue

## Feeling tired—really tired—may be tied to a number of factors:

- Cancer treatment, including chemotherapy
- The cancer itself
- The emotional aspects of coping with cancer and cancer pain
- Anemia (low levels of red blood cells, the iron-containing cells that carry vital oxygen from the lungs to the muscles and other tissues in the body)

If you are experiencing fatigue, you should know that this is a symptom for which you can and should seek help. If your doctor doesn't ask you about fatigue, be sure to bring it up. That's the best way to find and treat the cause, including fatigue that is a side effect of chemotherapy.

## Treating Fatigue

To determine whether there is an underlying physical cause, your doctor may order a number of blood tests to find out if your red blood cell count is abnormally low (anemia), or other hormones or naturally-occurring salts are out of balance. If you are anemic, there are treatment options available. Be sure to take only treatments prescribed by your doctor. Don't try to treat yourself with over-the-counter vitamins or medicines for "iron-poor blood." These medicines have not proven to be helpful.

## Coping With Fatigue

These tips can help you reduce your fatigue:

- Take several short naps or breaks in a comfortable chair rather than in bed.
- Take walks or do some other type of exercise, if possible. It may not make sense at first but proper activity can reduce fatigue rather than add to it.
- Try easier or shorter versions of the activities you enjoy.
- Ask your family or friends to help you with tasks you find difficult or tiring.
- Save your energy for things you find most important.
- Talk to an oncology social worker or oncology nurse. They can work with you to manage any emotional or practical concerns that may be causing symptoms and help you develop ways to cope.



# Mouth Sores (Mucositis)

Radiation treatments for head and neck cancer and some types of chemotherapy can cause sores inside the mouth and on the mucous lining of the throat and digestive tract. These sores, called mucositis, can be a serious problem because they can cause pain and infections, making it difficult to eat, drink and swallow.

Once treatment ends, mouth sores do disappear within a few weeks. But before they start and while they are present, it's important that you work closely with your health care team to manage this side effect of cancer treatments, including chemotherapy.



## Maintaining Oral Health

One of the key things you can do to manage mucositis is to take good care of your mouth, including keeping it clean. Here are some tips:

- Visit your dentist before treatment. He or she can make sure that your mouth is as healthy as possible before you begin treatment and can provide important information to the rest of your health care team.
- Choose a soft-bristle brush for brushing your teeth.
- If toothpaste irritates your mouth, use a mixture of a half teaspoon of salt with four cups of water.
- Gargling may also help. Use a solution made up of one quart of plain water, a half teaspoon of table salt and a half teaspoon of baking soda.
- Drink plenty of fluids.

## Soothing Mouth Pain

There are several options for soothing mouth pain. Before you begin any of these treatments, talk with your doctor about the best ones for you. Some require a prescription:

- Ice chips or Popsicles
- Ibuprofen (such as Motrin), naproxen (such as Aleve and others) or acetaminophen (such as Tylenol) for mild pain
- Over-the-counter oral anesthetics, such as Anbesol, Xylocaine or Orajel. Let your doctor know if you are using them, especially if he or she has prescribed a lidocaine based mouthwash.
- Gelclair, an oral gel designed to coat and soothe mouth sores by forming a protective barrier in the mouth. This product is available by prescription only.



- “Magic mouthwash” is another prescription product designed to soothe mouth sores. It contains Maalox to coat the mouth and lidocaine to relieve the pain. Some pharmacies that specialize in cancer care offer their own version of magic mouthwash.
- Opiates, a class of drugs that includes morphine, may also be prescribed to help you cope with mouth pain. A fast-acting opiate called fentanyl citrate is available in a berry-flavored lozenge on a stick (Actiq and others). It may be used to help prevent mouth sores. Like a cough drop, the lozenge dissolves in the mouth, and the drug is delivered quickly into the bloodstream.

It’s important to manage mouth pain because it can affect your quality of life and even slow progress toward better health. When your pain is controlled, you will be better able to eat and drink fluids. If you experience any changes in your mouth, be sure to report them to your doctor or nurse.



## Nerve Damage

**Some people on chemotherapy experience numbness or tingling in their hands and feet—what doctors call peripheral neuropathy.** Side effects of chemotherapy related to neuropathy and other types of nerve damage may include:

- Difficulty picking up objects or buttoning clothing
- Problems with balance
- Difficulty walking
- Hearing loss
- Feeling of “pins and needles” or “hot and cold”

These symptoms can build over time. Some people don’t notice them until they have had several chemotherapy treatments.

### Managing Nerve Damage

It’s important to tell your doctor as soon as possible if you experience these types of side effects. He or she may want to adjust some of your medicines or chemotherapy and may want to see if there is another reason for the problem that can be treated.

Often, nerve damage is temporary; it will usually get better, but it can take time. If you have neuropathy, take extra caution when handling hot, sharp or dangerous objects. And, use handrails on stairs and in the tub or shower.

# Neutropenia and Infections

**The term “neutropenia” refers to an unusually low number of neutrophils, a type of infection-fighting white blood cell.**

Because neutrophils are short-lived, the body produces about 100 billion of these cells every day. They play a key role in maintaining good health by seeking out and destroying harmful bacteria.

Chemotherapy can reduce the number of neutrophils in the blood, which can lead to fever (febrile neutropenia), as well as infections—some of which can be serious and life-threatening. Doctors rate the severity of neutropenia based on the number of neutrophils per microliter of blood (one-millionth of a liter, or quart). A blood test measures the neutrophil count: 1,700 per microliter or above is considered normal; 1,000 to 1,500 is mild neutropenia; 500 to 1,000 is moderate; less than 500 is severe. The risk of infections rises when neutropenia is more severe and long-lasting.



Neutrophil counts usually start to drop about a week after each round of chemotherapy begins. They often reach a low point (called the nadir) about seven to 14 days after treatment. This is when infections are more likely to develop. The neutrophil count starts to rise again as the bone marrow resumes its normal production of neutrophils. It can take as long as three to four weeks to reach a normal level again.

If neutropenia develops or the neutrophil level does not return to normal quickly enough, a doctor may postpone the next round of chemotherapy or recommend a lower dose.

People who receive standard chemotherapy treatments for most solid tumors such as breast or lung cancer have a lower risk of developing neutropenia than do those with leukemia or lymphomas. But it's important for all people with cancer to be aware of this side effect and to work closely with their health care team to prevent and treat it effectively. After a chemotherapy session, call your doctor or nurse if you notice any of these side effects of chemotherapy:

- Fever (body temperature above 101°F)
- Sore mouth or gums
- Pain or swelling in the gums
- Swollen, inflamed or pus-filled skin sores
- Sinus or ear infections
- Cough and shortness of breath with fever
- Irritation in and around the anus

## Your Support Team

**When you are diagnosed with cancer, you're faced with a series of choices that will have a major effect on your life. Your health care team, family members and friends will likely be an invaluable source of support at this time. You can also turn to these resources:**

**Oncology social workers** provide emotional support for people with cancer and their loved ones. These professionals can help you cope with the challenges of a cancer diagnosis and guide you to resources. CancerCare offers free counseling from professional oncology social workers who understand the challenges faced by people with cancer and their caregivers. We can work with you one-on-one to develop strategies for coping with treatment and its side effects.

Oncology social workers can also help you communicate with your doctor and other members of your medical care team about the health care issues that are important to you.

**Support groups** provide a caring environment in which you can share your concerns with others in similar circumstances. Support group members come together to help one another, providing insights and suggestions on ways to cope. At CancerCare, people with cancer and their families can participate in support groups in person, online or on the telephone.

**Financial help** is offered by a number of organizations to assist with cancer-related expenses such as transportation to treatment, child care or home care.

## Treating Infections

Doctors use three main types of medications to treat the effects of neutropenia: antibiotics for bacterial infections; antifungal drugs for fungal infections found in the throat or lungs, for example; and colony-stimulating factors (CSFs) to raise the number of white blood cells. For some people, continual use of antibiotics or antifungals as a preventive measure may be beneficial.

CSFs are used both to treat neutropenia and prevent it if a person is at increased risk of developing the condition after receiving chemotherapy. They work by stimulating the bone marrow to produce more white blood cells.

## Preventing Infections

There are a number of practical steps you can take to lower your risk of getting an infection while on chemotherapy:

- Avoid people with a cold, bronchitis, pneumonia or other infectious disease.
- Wash your hands regularly or use a liquid hand sanitizer such as Purell, which can help sterilize your skin. (Picking up an infection can be as easy as shaking someone's hand and then touching your nose or eye.) Be sure to use plenty of soap and warm water, and wash your hands for at least 20 seconds (the time it takes to sing the "Happy Birthday" song twice).
- Take care of your skin and avoid scratches or abrasions. Skin is an important barrier to germs.
- Be careful when doing activities that could lead to injury or infection, such as gardening or mowing the lawn. Wear gloves when doing these chores.

- Clean cuts and scrapes right away. Use an antiseptic, and keep wounds clean and dry until they heal.
- Avoid contact with cat litter boxes, bird cages and fish or reptile tanks.
- Careful food handling is a very important part of preventing food-borne infections.
- After using the restroom, wash your hands thoroughly before eating, as well as before and after each step of food preparation. Also, wash your hands after handling the garbage or touching your pet.
- Always use separate cutting boards for raw meat, poultry and fish.
- Keep cutting boards, counter tops and utensils clean.
- Keep raw meat, poultry, seafood and eggs away from ready-to-eat foods.
- Thaw frozen meat and poultry in the refrigerator, microwave or cold water; do not defrost frozen foods on the kitchen counter.
- Cook food thoroughly at proper temperatures. You may need to use a food thermometer to make sure foods are safely cooked. Steaks, roasts and fish should be cooked to 145°F and poultry to 160°F.
- Discard sponges regularly, and launder dish towels often.
- Wrap and refrigerate leftovers or freeze them within one hour of preparation to limit the growth of bacteria.
- If you eat dairy products or honey, make sure that they are pasteurized.
- Set the refrigerator between 34°F and 40°F; set the freezer between 0°F and -2°F.
- Pay attention to food product expiration dates. If you're in doubt, throw it out.
- Do not buy or use food in cans that are swollen, dented or damaged.



# Diarrhea

**Defined as two or more loose stools per day, diarrhea may be a side effect of certain chemotherapy drugs.** There are many things you can do to help control diarrhea. If diarrhea persists, especially large and frequent stools, you should report it to your doctor or nurse.

## Making Changes to Your Diet

Many foods can nourish you without contributing to diarrhea. Here are some suggestions for making healthy choices:

CHOOSE	INSTEAD OF
<b>High-protein foods such as eggs (well cooked), lean meat, fish, poultry, smooth peanut butter* or beans*</b>	Fried or fatty foods (such as sausage, bacon, chicken nuggets, fried seafood or pizza)
<b>Skim or low-fat milk, yogurt or cottage cheese (use lactose-free dairy products if you are lactose intolerant)</b>	Regular milk or cheese with more than 9 grams of fat per ounce
<b>Cooked vegetables* such as carrots, green beans or mushrooms</b>	Raw vegetables, especially those with thick skins, seeds or stringy fibers
<b>Fresh fruits without the skin or canned fruit (except prunes)</b>	Dried fruits
<b>Desserts low in fat and lactose, such as sorbets, fruit ices or graham crackers</b>	High-fat ice creams or any candies, gum, or breath mints containing sorbitol, mannitol or xylitol

**NOTE:** Foods marked with an asterisk (\*) are high in soluble fiber, which forms stools but also can increase the amount of stool. Choose them when you can manage more stools.

## Replacing Lost Fluids and Salts

If you are having diarrhea, it is very important to drink plenty of water. You can also increase your intake of drinks such as Gatorade or Pedialyte. These drinks provide electrolytes—the body’s salts—which must stay in balance for cells to work properly. Replacement of potassium and sodium salts is essential.

Occasionally, intravenous fluids may be needed, if the diarrhea is especially severe.

## Taking Medicine for Diarrhea

Over-the-counter medicines and prescription treatments are available for diarrhea, but you should use them only if they are necessary.

The most recommended over-the-counter medicine for diarrhea is loperamide (Imodium and others). But you should remember that loperamide used to be a prescription medicine and can be quite powerful. In general, if the diarrhea is bad enough for you to need medicine, including an over-the-counter one, you should discuss the diarrhea and its treatment with your doctor or nurse.

Your doctor may need to prescribe a stronger medication such as diphenoxylate and atropine (Lomotil and others). Like all medicines, these products can interact with other drugs you may be taking, such as opiate pain relievers. Be sure to report to your health care team any reactions you experience.

# Constipation

**Defined as fewer than three bowel movements a week (although fewer than four or five may be a reduced number for some people), this symptom can be caused by:**

- Certain chemotherapy drugs, including vinorelbine (Navelbine and others), vincristine and temozolomide (Temodar and others)
- Inactivity
- Low fluid intake
- Low amounts of fiber in the diet
- Anti-nausea medications
- Opiate pain medications

In cases of severe constipation, liquid can seep around a blockage, which some people mistake for diarrhea. They may take an anti-diarrheal medication, making the problem worse. With prolonged constipation, other symptoms, such as confusion and retaining urine, can occur.

## Avoiding Constipation

Here are some things you can do to help prevent constipation:

- Eat plenty of dietary fiber. Grains, beans and vegetables such as cauliflower or broccoli are good sources of fiber.
- Drink plenty of fluids.
- Make exercise a part of your everyday schedule.

## Treating Constipation

Stool softeners such as docusate sodium (Colace and others), which may be helpful, are often not enough to manage this side effect. Pharmacies carry a number of different laxatives that are available without a prescription. The best thing to do is to prevent constipation through diet, exercise and careful use of laxatives. Prescription pain medicines may be one of the biggest reasons people with cancer experience constipation. But your doctor can prescribe a special schedule of laxatives along with your pain medication so that you can still benefit from pain relief and avoid constipation. Some constipation remedies are best used for a short time and some for longer periods. Be sure to ask.



# Hair Loss

**Not all anti-cancer medicines cause hair loss; your doctor or nurse can tell you whether you might be affected.** Hair loss is often one of the more frustrating side effects of chemotherapy and cancer treatment. When hair falls out, it can affect a person's self-image and quality of life. But there are ways to cope with this side effect of chemotherapy.

Everyone's experience is different, so it's important to talk with your doctor or nurse about how your particular treatment affects hair loss. Depending on the treatment, hair loss may start anywhere from seven to 21 days after the first chemotherapy session. Hair usually starts to grow back after you are finished with treatment. It may have a different texture or color, but these changes may not be permanent.

## Coping With Hair Loss

Many people who lose their hair after cancer treatment choose to wear some kind of head covering, whether it's a scarf, turban, hat or wig. Some insurance plans cover part of the cost of these head coverings. Organizations such as CancerCare can also suggest places where you can find wigs.

If you choose to wear a wig, consider buying one before all of your hair falls out. This way, you will have a good match to your own hair color. Having a wig ahead of time will also help you feel more prepared. You can have your wig professionally fitted and styled by a full-service wig salon. Some salons specialize in hair loss from chemotherapy.





## CancerCare Can Help

**Receiving a diagnosis of cancer can be very difficult, and adjusting to the necessary changes in your life can be challenging.**

CancerCare can help. We are a national nonprofit organization providing free, professional services to anyone affected by cancer. Our licensed oncology social workers can provide support and education, help in navigating the complicated health care system, and provide information on support groups and other resources.

To learn more about how CancerCare helps, call us at 800-813-HOPE (4673) or visit [www.cancercares.org](http://www.cancercares.org).

You will likely also build your own personal support network, comprised of family and friends. In doing so, it's best to take some time to think about the people in your life and how they are best suited to help. Match the task to their strengths—ask a family member who loves to shop to pick up something for you at the store; ask a friend who's a good listener to come over for a chat.



# Frequently Asked Questions

**Q: I've had some nerve damage as a side effect of my treatment. Should my doctor consider changing the type of chemotherapy I'm getting?**

A: This is a judgment call. You and your doctor have to weigh the risks and benefits of your treatment. The decision will depend on how severe your symptoms are, where you are in the course of your treatment, how much your tumor has responded to chemotherapy, the current goals of treatment and whether there are other effective drugs available that do not cause nerve damage. However, even if you stop using a medicine today, you will probably continue to have symptoms for some time. And because nerve damage builds up over time, the symptoms may increase before they decrease. Talk with your doctor or nurse about medications, as well as other treatments that may help ease discomfort.

**Q: I haven't experienced many side effects from my chemotherapy, so I'm wondering whether my treatment is really working.**

A: Sometimes, people can benefit from chemotherapy without having a lot of side effects or possibly even any side effects. An important goal is to prevent side effects, and it sounds as though you and your doctors have been able to do that. Not having side effects might be due to other factors as well. For example, every drug affects each person differently and at different stages of treatment. And some chemotherapy drugs are known to cause less severe side effects than others.

**Q: When a patient has neutropenia (a low white blood cell count), what are the most common types of bacteria that cause infections, and what antibiotics are used?**

A: There are many different bacteria that can cause infection. That is why a broad-spectrum antibiotic (an antibiotic used to treat a wide range of these organisms) is usually prescribed to treat infection. Doctors see different patterns of infection in different geographic regions. These patterns help doctors decide which medicines are given to treat infections and prevent them from becoming worse.

**Q: There have been many discussions in my support group and on the Internet about the side effect referred to as "chemobrain." What is chemobrain, and what can be done about it?**

A: If you are having memory problems and trouble focusing on tasks, finding words or managing daily activities, you are not alone. Many people notice these changes while receiving chemotherapy. But most find that within a year of finishing treatment, these symptoms have either greatly improved or disappeared altogether. Researchers are still uncertain about the exact causes of chemobrain. But a number of conditions that may lead to these symptoms can be treated effectively: low blood cell counts, depression, anxiety and fatigue among them. Tell your doctor if you're having any of the symptoms of chemobrain. Sometimes, simply changing a prescription can make a real difference in how you feel, because some medications can also make you less alert.



## Resources

### **CancerCare**

800-813-HOPE (4673)

[www.cancer.org](http://www.cancer.org)

### **CancerCare Co-Payment Assistance Foundation**

866-55-COPAY (866-552-6729)

[www.cancer.org/copayfoundation](http://www.cancer.org/copayfoundation)

### **American Cancer Society**

800-227-2345

[www.cancer.org](http://www.cancer.org)

### **Cancer.Net**

[www.cancer.net](http://www.cancer.net)

### **National Cancer Institute**

800-422-6237

[www.cancer.gov](http://www.cancer.gov)

### **National Comprehensive Cancer Network**

215-690-0300

[www.nccn.org](http://www.nccn.org)

### **Needy Meds**

[www.needymeds.org](http://www.needymeds.org)

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