



Understanding Chemotherapy: A Guide for Patients and Families

You've been told you have cancer. You've studied your treatment options, and you and your doctor have agreed that chemotherapy is your best choice. Now you may have questions about chemotherapy treatment.

The American Cancer Society has answers for you. But remember that, along with reading about your treatment, you can also count on your doctor and nurse to answer questions.

At the end of this document, you will find a glossary that defines some of the words and terms used by your health care team. The words that are in italic type the first time they are used are also in the glossary. You can use the glossary to help you better understand the talks you have with your health care team. Open and honest talks with your cancer care team are the best way to understand what is going on with you, your body, and the cancer.

Learning about chemotherapy treatment

What is chemotherapy and how does it work?

Chemotherapy is the use of medicines or drugs to treat disease. Many times this treatment is just called "chemo." Surgery and *radiation therapy* remove, kill, or damage *cancer* cells in a certain area, but chemo works throughout the whole body. Chemo can kill cancer cells that have *metastasized* or spread to parts of the body far away from the primary (original) *tumor*.

More than 100 chemo drugs are used in many combinations. A single chemo drug can be used to treat cancer. But for the most part, the drugs work better when used in certain combinations. This is called *combination chemotherapy*. A combination of drugs with different actions can work together to kill more cancer cells. It can also reduce the chance that the cancer may become resistant to any one chemo drug.

You and your doctor will decide what drug or combination of drugs you will get. Your doctor will choose the doses, how the drugs will be given, and how often and how long you will get treatment. All of these decisions will depend on the type of cancer, where it is, how big it is, and how it affects your normal body functions and overall health.

What is the goal of chemo?

Depending on the type of cancer and its stage (if and how far it has spread), chemo can be used to:

- Cure the cancer.
- Keep the cancer from spreading.
- Slow the cancer's growth.
- Kill cancer cells that may have spread to other parts of the body.
- Relieve symptoms caused by cancer.

Your doctor will talk to you about the goal of your chemo before you start treatment.

Will chemo be my only treatment for cancer?

Sometimes chemo is the only treatment you need. More often, chemo is used along with surgery or radiation therapy or with both. Here's why:

- Chemo may be used to shrink a tumor before surgery or radiation therapy.
- It may be used after surgery or radiation therapy to help kill any remaining cancer cells.
- It may be used with other treatments if your cancer comes back.

When chemo is given after surgery to kill any cancer cells that may still be present, it is called *adjuvant therapy*. When chemo is used to shrink a tumor before surgery or radiation therapy, it is called *neoadjuvant therapy*.

A checklist of questions to ask your doctor or nurse

Before choosing chemo as a treatment option, you should understand the expected benefits, side effects, and risks. Consider asking your doctor or nurse the questions below. It may help to write down questions to take with you to your next visit. Learn as much as you can about your treatment, and get an idea of the expected outcome.

- What is the goal of chemo for my cancer?
- What are the chances that the chemo will work?
- After chemo, will I be cured, in *remission*, or have fewer symptoms?

- Are there other ways to get to the same goals?
- How will I know if the chemo is working?
- If the chemo does not work, are there other treatments for me?
- What are the risks and side effects of the chemo I will be taking? How do side effects of this chemo compare with side effects of other treatments?
- How will I get the chemo, how often, and for how long?
- Where will I get chemo?
- What can I do to get ready for treatment and decrease the chance of side effects?
- Will I need to change my diet in any way? My activities? My work? Exercise? Sexual activities?
- Will I also need surgery, radiation, or both? If so, when and why? What results can I expect?
- If I have chemo after surgery or radiation, will it kill any remaining cancer cells? Could chemo be used alone?
- Can I take part in a *clinical trial*?
- How much will chemo cost? Will my health insurance cover it?
- If the insurance company asks for a second opinion, or if I would like to get one, can you suggest someone for me to see?

Here are some tips to help you remember your doctor's answers:

- Take notes during your visits. Don't feel shy about asking your doctor to slow down if you need more time to write. Ask questions if you don't understand something.
- If you can, record your visit so you won't miss anything. But first ask your doctor if it is OK to record your talks.
- Consider taking a friend or relative with you to help you understand what your doctor says during the visit and refresh your memory afterward.

You might want to look at our booklet called *After Diagnosis: A Guide for Patients and Families* for more ideas about the things you and your family may want to know.

Should I get a second opinion?

One way to find out if a suggested treatment is the best one for you is to get the opinion of at least one other doctor before starting treatment. Your doctor should not mind if you get a second opinion. In fact, some insurance companies require you to get one. Often, the results of any tests you have already had can be sent to the second doctor, so you won't have to repeat them.

Find out if your insurance company covers second opinions before you get one.

Where will I get chemo?

The place you get your treatment depends on which chemo drugs you are getting, the drug doses, your hospital's policies, your insurance coverage, what you prefer, and what your doctor recommends.

You may be treated with chemo:

- At home
- In your doctor's office
- In a clinic
- In a hospital's outpatient department
- In a hospital

Some of these settings may have private treatment rooms, while others treat many patients together in one large room. It is important to be in a setting that is comfortable for you. Talk to your doctor or nurse ahead of time so that you know what to expect your first day.

How often will I need to get chemo and how long will it last?

How often you get chemo and how long your treatment lasts depend on the kind of cancer you have, the goals of the treatment, the drugs being used, and how your body responds to them. You may get treatments daily, weekly, or monthly, but they are usually given in on-and-off cycles. The breaks allow your body to build healthy new cells and regain its strength.

Many people wonder how long the actual drugs stay in their body and how they are removed. Most chemo drugs are broken down by your kidneys and liver and then are removed from your body through your urine or stool. The time it takes your body to get rid of the drugs depends on many things, including the type of chemo you get, other medicines you take, your age, and your kidney and liver functions. Your doctor will tell you if you will need to take any special precautions because of the drugs you are getting. (See "How can I protect myself and those I live with while I am getting chemo?" in the section called "Chemo safety" for general safety tips to follow at home.)

If your cancer comes back, chemo may be used again. This time, you may be given different drugs to relieve symptoms or to slow the cancer's growth or spread. Side effects may be different, depending on the drug, the dose, and how it is given.

How will the chemo be given to me?

Most chemo drugs are given through a tiny plastic tube called a *catheter*. A needle is used to put the catheter into a vein in your forearm or hand; then the needle is taken out, leaving the catheter behind. This is called *intravenous*, or IV treatment. Intravenous drugs are given in these ways:

- The drugs can be given quickly through the catheter right from a syringe over a few minutes. This is called an IV push.
- An IV *infusion* can last 30 minutes to a few hours. A mixed drug solution flows from a plastic bag through tubing that is attached to the catheter. The flow is often controlled by machine called an IV pump.
- Continuous infusions are sometimes needed and can last from 1 to 7 days. These are always controlled by electronic IV pumps.

The needles and catheters can scar and damage veins with ongoing chemo. Another option is the *central venous catheter (CVC)*. The CVC is a bigger catheter, which is put into a large vein in the chest or upper arm. It stays in place through treatment so that IV medicines can be given more easily. Blood can also be drawn from CVCs.

Many different kinds of CVCs are available. Some are soft tubes that stick out of the skin and require no needles. Another type is a *port*, which is like a small drum with a thin tube going into the vein. Ports are permanently placed under the skin of the chest or arm during surgery. Special needles are then stuck through the skin into the port to use it.

Many people talk about CVC options with the doctor even before starting treatment. Some find out during treatment that they need a CVC because their hand and arm veins are not good enough to complete the planned chemo. Your doctor can help you decide if you need a CVC and the right type of CVC for you.

Depending on the drugs and where the cancer is located, your chemo also may be given in one or more of these ways:

- *Orally* or *PO* – This means by mouth. You swallow the drug as a pill, capsule, or liquid – just as you do other medicines. This is usually more convenient because the drugs can often be taken at home. If you take chemo drugs by mouth, it is very important to take the exact dosage, at the right time, for as long as it has been prescribed for you. For more information please see our document called *Oral Chemotherapy: What You Need to Know*.
- *Intrathecal* or *IT* – The drug is put into the spinal canal and goes into the fluid that surrounds your brain and spinal cord. This fluid is called the cerebrospinal fluid (CSF). You may either have a needle put right into your spine to quickly give the drug, or a long-term catheter and port can be put under the skin on your head during surgery. This port is called an Ommaya reservoir. The Ommaya is a small drum-like device that has a small tube attached to it. The tube goes in to the CSF in your spinal canal. It stays in place under your skin until treatment is done.

- *Intra-arterial* – The chemo drug is put right into an artery to treat a single area (such as the liver, an arm, or leg). This method limits the effect of the drug on other parts of the body.
- *Intracavitary* – Chemo drugs may be given through a catheter into the abdominal cavity (the space around the bowels and other organs in the belly) or chest cavity (the space around the lungs and other organs in the chest).
- *Intramuscular* or *IM* – The drug is put in through a needle into a muscle (as a shot).
- *Intralesional* – A needle is used to put the drug right into a tumor in the skin, under the skin, or in an internal organ.
- *Topical* – The drug is put right on to an area of cancer on the skin as a cream, gel, or ointment.

Does chemo hurt?

You already know how it feels to take a pill or rub a medicine on your skin. And you've probably felt the brief discomfort of a shot (or an *injection*) before. IV medicines should not hurt after the first needle stick to put in the catheter. If you feel pain, burning, coolness, or anything unusual while you are getting chemo, tell your doctor or nurse right away.

What are clinical trials?

Clinical trials are carefully designed research studies that test promising new cancer treatments. You may want to talk to your doctor about this option. Patients who take part in research studies will be the first to benefit from these treatments. These patients can make an important contribution to medical care because the study results will also help other patients. In a clinical trial, you get either standard treatment or a new treatment that is thought to be as good as – or maybe better than – the standard treatment. Studies are never done to see if you would recover from cancer without treatment at all. As with any other medical treatment, you are free to withdraw from a clinical trial at any time and seek other treatment options.

To learn more about clinical trials:

- Ask for our document on clinical trials called *Clinical Trials: What You Need to Know*, or read it on our Web site.
- The American Cancer Society also offers a Clinical Trials Matching Service to help you find clinical trials that might be right for you. The service is available by telephone from 7:30 a.m. until 7:00 p.m. CT Monday through Friday at 1-800-303-5691, or you can fill out a screening questionnaire anytime at www.cancer.org/clinicaltrials.

- The National Cancer Institute (NCI) can give you a list of clinical trials based on the type and stage of your cancer. Call 1-800-422-6237, or visit the NCI's Web site at www.nci.nih.gov.

Can I take other medicines while I am getting chemo?

Some medicines may interfere with the effects of your chemo. To be sure that your treatment works as well as it can, tell your doctor or nurse about any and all prescription and non-prescription medicines, vitamins, herbs, and supplements you are taking.

- Make a list of the name of each drug, the dose, how often you take it, who prescribed it, and the reason you take it.
- Be sure to include the things you may not think of as medicines, even those you take every now and then. This includes aspirin, herbal and dietary supplements, vitamins, minerals, and all over-the-counter medicines.

Your doctor will tell you if you should stop taking any of these medicines before you start chemo. After your treatments start, check with your doctor before taking any new medicines or supplements and before stopping the ones you already take.

How will I know if the chemo is working?

Your cancer care team will measure how well your treatments are working by doing certain tests. This may include physical exams, blood tests, *bone marrow* biopsies, scans, and x-rays. Ask your doctor about the test results and what they show about your progress. You may have side effects, but these side effects do not tell you whether treatment is working.

How do I give my permission for this treatment?

You will be asked to give your written permission to get chemo based on your understanding of the drugs your doctor recommends. Know the answers to all of these questions before you sign the consent form.

- Which chemo drugs will I be given?
- How will the drugs be given to me?
- How often will I need to get chemo?
- How long will my treatments last?
- What side effects could I have from these drugs?
- How likely is this treatment to be successful?

The specifics of the consent form may vary from state to state, but the form usually states that your doctor has explained your condition to you, how the chemo will benefit you, the risks, and the other options available to you. Your signature on the form means that you

have gotten this information and that you are willing to be treated with chemo. This process is called giving informed consent.

Chemo safety

Can I be around my family and friends while I am getting chemo?

Very few treatments require you to avoid close contact with loved ones for a short amount of time. If this is something you will have to do, your doctor will tell you about it when going over treatment options.

Most chemo drugs do make you less able to fight infection. It is very important that you stay away from anyone who is sick. The best way to prevent infection is by washing your hands often, especially before touching your face, nose, mouth, or eyes. Ask your family and friends to do the same when they are with you. For more information, see “How will chemo affect my blood cell counts?” in the section called “Increased chance of bruising, bleeding, and infection.”

For more information on being at home with family and friends during treatment, please see our booklets called *Helping Children When a Family Member Has Cancer: Dealing With Treatment* and *Caring for the Patient With Cancer at Home: A Guide for Patients and Families*.

How can I protect myself and those I live with while I am getting chemo?

There are many things you can do during and after chemo to keep yourself and your loved ones from being affected by the drugs while your body is getting rid of them. It takes about 48 hours for your body to break down and/or get rid of most chemo drugs.

Most of the waste comes out in your body fluids – urine, stool, tears, and vomit. The drugs are also found in your blood. When these drugs get outside your body, they can harm or irritate skin – yours or even other people’s. Keep in mind that this means toilets can be a hazard for children and pets, and it is important to be careful. Talk to your doctor about these and any other precautions you should follow.

During – and for 48 hours after – chemo:

- Flush the toilet twice after you use it. Put the lid down before flushing to avoid splashing. If possible, you may want to use a separate toilet during this time.
- Both men and women should sit on the toilet to use it. This cuts down on splashing.
- Always wash your hands with warm water and soap after using the toilet. Use paper towels to dry your hands and throw them away.

- If you vomit into the toilet, clean off all splashes and flush twice. If you vomit into a bucket or basin, carefully empty it into the toilet without splashing the contents and flush twice. Wash out the bucket with hot soapy water and rinse it, emptying the wash and rinse water into the toilet, then flushing it. Dry the bucket with paper towels and throw them away.
- Caregivers should wear throw-away gloves if they need to touch any of your body fluids. (These can be bought in most drug stores.) They should always wash their hands with warm water and soap afterward – even if they had gloves on.
- If a caregiver does come in contact with any of your body fluids, they should wash the area very well with warm soap and water. It's not likely to cause any harm, but try to take extra care to avoid this. At your next visit, let your doctor know this happened. Being exposed frequently may lead to problems, and extra care should be taken to avoid this.
- Any clothes or sheets that have body fluids on them should be washed in your washing machine – not by hand. Wash them twice in hot water with regular laundry detergent. Do not wash them with other clothes. If they cannot be washed right away, seal them in a plastic bag.
- If using throw-away adult diapers, underwear, or sanitary pads, seal them in plastic and throw them away with your regular trash.

Adapted from The Cleveland Clinic Foundation, Chemotherapy Precautions During and After Treatment. Accessed at www.cchs.net/health/health-info/docs/4300/4350.asp?index=13586&pflag=1 on January 26, 2011.

Will I be able to work during treatment?

Whether you can continue work, school, and other activities depends on your treatment and how it affects you. For some treatments, you may need to stay in a hospital for a week or more, but many people are able to keep working during treatment. You might be able to schedule your treatments late in the day or right before the weekend so that they interfere with work as little as possible.

If chemo makes you tired, try to adjust your work schedule for a while. You may be able to arrange a part-time schedule or work from home. If you get health insurance from your employer, you will want to keep your job during treatment. Federal and state laws may require some employers to allow you to work a flexible schedule during your treatment.

To find out more about keeping your health insurance and your rights as an employee, call your local American Cancer Society office or our toll-free number. You can also find out about employment-related rights by contacting your congressional or state representatives.

Chemo side effects

What causes side effects?

Cancer cells tend to grow fast, and chemo drugs kill fast-growing cells. But because these drugs travel throughout the body, they can affect normal, healthy cells that are fast-growing, too. Damage to healthy tissue causes side effects. Side effects are not always as bad as you might expect, but many people worry about this part of their cancer treatment.

The normal cells most likely to be damaged by chemo are blood-forming cells in the bone marrow; hair follicles; and cells in the mouth, digestive tract, and reproductive system. Some chemo drugs can damage cells in the heart, kidneys, bladder, lungs, and nervous system. In some cases, medicines can be given with the chemo to help protect the body's normal cells.

What should I know about side effects?

- Every person doesn't get every side effect, and some people get few, if any.
- The severity of side effects varies greatly from person to person. Be sure to talk to your doctor and nurse about which side effects are most common with your chemo, how long they might last, how bad they might be, and when you should call the doctor's office about them. For more information, see the section called "When to call your doctor."
- Your doctor may give you medicines to prevent some side effects before they happen.
- Many people have no long-term problems from chemo. And although side effects can be unpleasant, they must be measured against the need to kill the cancer cells.

How long do side effects last?

Most side effects slowly go away after treatment ends because the healthy cells recover over time. The time it takes to get over some side effects and regain energy varies from person to person and depends on many factors, including your overall health and the drugs you were given.

Many side effects go away fairly quickly, but some may take months or even years to completely go away. Sometimes the side effects can last a lifetime, such as when chemo causes long-term damage to the heart, lungs, kidneys, or reproductive organs. Certain types of chemo sometimes cause delayed effects, such as a second cancer that may show up many years later.

Patients often become discouraged about how long their treatment lasts or the side effects they have. If you feel this way, talk to your doctor. You may be able to change your medicine or treatment schedule. Your doctor or nurse may be able to suggest ways to reduce any pain and discomfort you have.

What are common side effects?

You are not alone if you have questions about side effects. Before chemo starts, most people worry about whether they will have side effects and, if so, what they will be like. Here is a review of some of the more common side effects caused by chemotherapy. We also share some tips on how you can manage them.

Anemia

What is anemia?

When you have too few red blood cells, your body tissues don't get enough oxygen to do their work. This condition is called *anemia*. You may have these symptoms:

- Tiredness (*fatigue*)
- Dizziness
- Paleness
- A tendency to feel cold
- Shortness of breath
- Weakness
- Racing heart

Things that may help with anemia:

Try the suggestions listed in the section called "Fatigue" below if your anemia is making you feel very tired. Let your doctor or nurse know if you have any of the symptoms listed above. Your doctor will check your *blood cell count* (also called a complete blood count or CBC) often during your treatment. If your red blood cell count falls too low, you may need a blood transfusion. Some people can be treated with a *growth factor* to boost the number of red blood cells the bone marrow makes.

You can get more information in our document called *Anemia in People With Cancer*. Call for a copy, or read it on our Web site.

Fatigue

What is fatigue?

Fatigue is one of the most common side effects of cancer treatment. It can range from mild lethargy to feeling completely wiped out. It is different from feeling tired after a long day and does not get better with rest or sleep. Fatigue tends to be the worst at the end of a treatment cycle. Like most other side effects, it usually goes away after chemo ends.

Things that may help with fatigue:

- Get plenty of rest, and allow time during the day for rest periods.
- Talk with your doctor or nurse about a regular exercise program.
- Eat a well-balanced diet, and drink plenty of liquids.
- Limit your activities. Do only the things that are most important to you.
- Get help when you need it. Ask family, friends, and neighbors to pitch in with activities, such as child care, shopping, housework, or driving. For example, you might ask neighbors to pick up some items for you at the grocery store while doing their own shopping.
- Get up slowly to help prevent dizziness after sitting or lying down.
- Let your doctor know if you are having a hard time sleeping at night.

You can get more information in our document called *Fatigue in People With Cancer*, which is available on our Web site or by calling for a copy.

Hair loss

How do I deal with losing my hair?

Hair loss (*alopecia*) can be distressing. But not all chemo drugs will make you lose your hair. Some people have mild thinning that only they notice. Your doctor will be able to tell you if your chemo is likely to make you lose your hair.

If you do lose your hair, it will almost always grow back after the treatments are over. But it might be a different color or texture.

You can lose hair on all parts of your body, not just your scalp. Eyelashes and eyebrows, arm and leg hair, underarm hair, and pubic hair all may be affected. It usually doesn't happen right away. More often, hair loss begins after a few treatments. At that point, your hair may fall out slowly or in clumps. Any hair that remains may become dull and dry.

Things that may help with hair loss:

- Use mild shampoos.
- Use soft-bristle hair brushes.
- Use low heat if you must use a hair dryer.
- Don't use brush rollers to set your hair.
- Don't dye your hair or get a perm.
- Have your hair cut short. A shorter style will make your hair look thicker and fuller. It also will make hair loss easier to deal with if it does happen.
- Use a sunscreen, hat, scarf, or wig to protect your scalp from the sun.

- Use a satin pillowcase.

Sometimes, either during the regrowth of your hair or when you are bald, your scalp may feel extra tender, dry, and itchy. It may help to keep your scalp clean by using a moisturizing shampoo and conditioner. Also, use gentle creams or lotions on your scalp as needed. Even a gentle scalp massage may make your scalp feel better.

After chemo, your hair's texture and fullness may change. Hair dyes contain chemicals like peroxide that can damage hair. There is no research that supports hair dye doing more damage to hair after chemo, but most doctors recommend patients do not use hair dyes until hair returns to normal. This may be as long as 6 months after treatment.

Should I cover my head if I lose my hair?

Some people who lose all or most of their hair choose to wear turbans, scarves, caps, wigs, or hairpieces. Others leave their heads uncovered. Still others switch back and forth, depending on whether they are in public or at home with family and friends. Here are tips to follow if you choose to cover your head with a wig or hairpiece:

- Shop for your wig or hairpiece before you lose a lot of hair so you can match your natural color, texture, and style.
- You may be able to buy a wig or hairpiece at a specialty shop just for cancer patients.
- A sales person may be able to come to your home to help you.
- You can get more tips or even buy a wig or hairpiece through our “*tlc*” Tender Loving Care[®] catalog. Call us for a copy or visit the “*tlc*”[™] Web site at www.tlcdirect.org.
- If you would prefer to borrow rather than buy a wig or hairpiece, call us or check with the social work department at your treatment center.

If you need a hairpiece because of cancer treatment, it is a tax-deductible expense. It may also be at least partly covered by your health insurance. Be sure to check your policy, and ask your doctor to write a prescription for a “hair prosthesis.”

Increased chance of bruising, bleeding, and infection

How will chemo affect my blood cell counts?

The bone marrow produces 3 important parts of your blood:

- *Red blood cells*, which carry oxygen to cells throughout the body
- *White blood cells*, which fight infection
- *Platelets*, which help blood to clot and stop bleeding

Chemo destroys some of the bone marrow cells so fewer blood cells are produced. A drop in the levels of any one of these cells leads to specific side effects.

Your doctor will check your blood cell count by doing a test called a complete blood count or CBC. This will be done often during your treatment.

Bleeding or clotting problems

Chemo can affect the bone marrow's ability to make platelets. These are the blood cells that help stop bleeding by plugging up damaged blood vessels and helping your blood to clot. If you do not have enough platelets, you may bleed or bruise more easily than usual, even from a minor injury. A shortage of platelets is called thrombocytopenia.

Report these signs of thrombocytopenia to your doctor:

- Unexpected bruising
- Small red spots under your skin
- Red or pink urine
- Black or bloody bowel movements
- Any bleeding from your gums or nose
- Bad headaches
- Dizziness
- An increase in weakness
- Pain in joints and muscles

Your doctor will check your platelet count often during your treatment. If it falls too low, you may need a platelet transfusion.

Things that may help you avoid problems if your platelet count is low:

- Don't take any medicine without first checking with your doctor or nurse. This includes aspirin and aspirin-free pain relievers, like acetaminophen (Tylenol[®]), ibuprofen, and any other medicines you can buy without a prescription. Some of these medicines can weaken the platelets and make bleeding problems worse.
- Don't drink any alcohol (beer, wine, or liquor) unless your doctor says it's OK.
- Use an extra-soft bristle toothbrush to clean your teeth, and talk to your doctor before using dental floss.
- If you have a runny nose, blow gently into a soft tissue.
- Take care not to cut or nick yourself when using scissors, needles, knives, or tools.
- Be careful not to burn yourself when ironing or cooking. Use a padded glove rather than a potholder when you reach into the oven.
- Avoid contact sports and other activities that might cause an injury.
- Drink plenty of fluids and eat enough fiber to reduce the chances you will get constipated.

- Use an electric shaver instead of a razor.
- When bending over, keep your head above your heart.

Infection

Having a low white blood cell count decreases your body's ability to fight infections. One type of white blood cell, the neutrophil, is especially important in fighting infections. A shortage of neutrophils is called neutropenia.

Infections can begin in almost any part of your body and most often start in your mouth, skin, lungs, urinary tract, and rectum.

If your white blood cell count drops too much, your doctor may hold treatment, give you a lower dose of chemo, or give you a growth factor shot that makes your bone marrow put out more white blood cells.

Things that may help you prevent infections:

- Wash your hands often during the day, especially before you eat and after you use the bathroom.
- Stay away from crowds.
- Stay away from people who have diseases you can catch, such as colds, flu, measles, or chicken pox.
- Do not get any immunization shots (vaccines) without first checking with your cancer doctor (oncologist).
- Stay away from people who have recently had an immunization, such as a vaccine for chicken pox or small pox. Check with your doctor about which vaccines are important and how long you should stay away from people who have had them.
- Clean your rectal area very well but gently after each bowel movement. Ask your doctor or nurse for advice if the area becomes sore or if you have hemorrhoids. Also, check with your doctor before using enemas or suppositories.
- Don't cut, bite, or tear the cuticles of your nails.
- Be careful not to cut or nick yourself when using scissors, needles, or knives.
- Use an electric shaver instead of a razor to prevent breaks or cuts in your skin.
- Use an extra-soft bristle toothbrush that won't hurt your gums, and talk to your doctor before using dental floss.
- Don't squeeze or scratch pimples.
- Take a warm (not hot) bath, shower, or sponge bath every day. Pat your skin dry using a light touch. Don't rub.
- Use lotion or oil to soften and heal your skin if it becomes dry and cracked.

- Clean cuts, scrapes, and broken skin right away with warm water and soap. Use an antibiotic ointment and cover with a bandage.
- Wear waterproof gloves when gardening or cleaning up after animals and others, especially small children. Wash your hands afterward, since gloves can get holes that are too small to see.

Even if you are extra careful, your body may not be able to fight infections when your white blood cell count is low. Look out for and check your body regularly for signs and symptoms that you might have an infection. Pay special attention to your eyes, nose, mouth, and genital and rectal areas. The symptoms of infection could be:

- Fever of 100.5°F or greater when your temperature is taken by mouth
- Chills
- Sweating
- Loose stools (This can also be a side effect of chemo.)
- A burning feeling when you urinate
- A bad cough or sore throat
- Unusual vaginal discharge or itching
- Redness, swelling, or tenderness, especially around a wound, sore, pimple, IV site, or central venous catheter
- Abdominal (belly) pain

Report any signs of infection to your doctor right away. If you have a fever, don't use aspirin, acetaminophen (Tylenol), or any other medicine to bring your temperature down without first checking with your doctor.

Nausea and vomiting

What can I do about nausea and vomiting?

Nausea and vomiting are 2 of the most common and most dreaded side effects of chemo. How often you have these side effects and how bad they are depends on the drugs you are getting and how they affect you.

Nausea and vomiting may start during treatment and last a few hours. Sometimes, but less often, severe nausea and vomiting can last for a few days. Be sure to tell your doctor or nurse if you are very nauseated, if you have been vomiting for more than a day, or if the problem is so bad that you cannot keep liquids down.

The good news is that nausea and vomiting can almost always be lessened by a change in the way you eat and with drugs that help relieve both symptoms (these drugs are called *anti-emetics*). Different anti-emetics work for different people. You may need to try more

than one before you get relief. Don't give up! Keep working with your doctor and nurse to find the anti-emetics that work best for you.

About half of the people getting chemo feel queasy even before treatment begins. This is called anticipatory nausea, and it is very real. The best way to handle anticipatory nausea is by taking effective anti-emetics to prevent vomiting, and by using relaxation techniques.

Things that may help with nausea and vomiting:

- Avoid big meals so your stomach won't feel too full. Eat frequent, small meals throughout the day instead of 1, 2, or 3 large meals.
- Drink liquids at least an hour before or after mealtime instead of with your meals.
- Eat and drink slowly.
- Stay away from sweet, fried, or fatty foods.
- Eat foods cold or at room temperature so you won't be bothered by strong smells.
- Chew your food well for better digestion.
- If nausea is a problem in the morning, try eating dry foods, such as cereal, toast, or crackers, before getting up. (Don't try this if your mouth is too dry, or if you have sores in your mouth or throat.)
- Drink cool, clear liquids, such as apple juice, tea, or ginger ale that has lost its fizz.
- Suck on ice cubes, mints, or tart candies. (Don't eat tart candies if you have mouth or throat sores.)
- Try to avoid odors that bother you, such as cooking smells, smoke, or perfume.
- Rest in a chair after eating, but don't lie flat for at least 2 hours after you've finished your meal.
- Wear loose-fitting clothes.
- Breathe deeply and slowly when you feel nauseated.
- Distract yourself by talking with friends or family members, listening to music, or watching a movie or TV show.
- Use relaxation techniques.

Call us or go to our Web site to get more tips and details in our document called *Nausea and Vomiting*.

Other chemo side effects and tips to manage them

Appetite changes

There may be days when you just can't eat because of things like nausea, taste changes, or mouth and throat problems. You also can lose your appetite if you feel depressed or tired.

When you have a poor appetite, try these tips:

- Eat small meals or snacks whenever you want. You don't have to eat 3 regular meals each day.
- Vary your diet, and try new foods and recipes.
- Take a walk before meals whenever you can. This may help you feel hungrier.
- Change your mealtime routine. For example, eat by candlelight or in a different place.
- Eat with friends or family members. When eating alone, listen to the radio or watch TV.
- If you live alone, you might want to arrange for Meals on Wheels or a program like this to bring food to you. Ask your doctor, nurse, or local American Cancer Society office about services in your area.

For more information, please see our booklet called *Nutrition for the Person With Cancer During Treatment: A Guide for Patients and Families* or *Nutrition for Children With Cancer*.

Constipation

Some people become constipated (have trouble passing bowel movements) from chemo. Others may become constipated because they are less active, eat less than usual, have diet changes, or because they are taking certain pain medicines. Tell your doctor if you have not had a bowel movement in 2 or more days. You may need to take a laxative or stool softener, but don't use these unless you have checked with your doctor, especially if your white blood cell count or platelet count is low.

Things that may help you deal with constipation:

- Drink plenty of fluids to help keep your stool soft. Warm and hot fluids work especially well.
- Eat a lot of high-fiber foods. High-fiber foods include bran, whole-wheat breads and cereals, raw or cooked vegetables, fresh and dried fruit, nuts, and popcorn.
- Get some exercise. Just getting out for a walk can help, as can a planned exercise program. Be sure to check with your doctor before increasing your physical activity.

Diarrhea

When chemo affects the cells lining the intestine, it can cause diarrhea. Diarrhea is most often defined as 2 or more loose stools in 4 hours. If you have diarrhea that lasts for more than 24 hours, or if you have pain and cramping along with it, call your doctor. In severe cases, the doctor may have you take an anti-diarrheal medicine, but don't take any over-the-counter anti-diarrheal medicines without asking your doctor first.

Things that may help control diarrhea:

- Eat smaller amounts of food, but eat more often.
- Avoid coffee, tea, alcohol, and sweets.
- Avoid high-fiber foods, which can lead to diarrhea and cramping. High-fiber foods include whole-grain breads and cereals, raw vegetables, beans, nuts, seeds, popcorn, and fresh and dried fruit.
- Eat low-fiber foods, such as white bread, white rice or noodles, creamed cereals, ripe bananas, canned or cooked fruit without skins, cottage cheese, yogurt, eggs, mashed or baked potatoes without the skin, pureed vegetables, chicken or turkey without the skin, and fish.
- Stay away from fried, greasy, or spicy foods.
- Avoid milk and milk products if they make your diarrhea worse.
- Eat more potassium-rich foods, such as bananas, oranges, potatoes, and peach and apricot nectars, unless your doctor has told you otherwise.
- Drink plenty of fluids to replace those you have lost through diarrhea. Mild, clear liquids, such as apple juice, water, clear broth, or ginger ale are best. Make sure they are at room temperature, and drink them slowly. Let carbonated drinks lose their fizz before you drink them.

If your diarrhea is severe (meaning that you have had 7 or 8 loose stools in 24 hours), tell your doctor right away. Ask if you should try a clear-liquid diet to give your bowels time to rest.

As you feel better, slowly add the low-fiber foods. A clear-liquid diet doesn't have all the nutrients you need, so don't follow it for more than 3 or 4 days. If your diarrhea doesn't get better, you may need to get IV fluids to replace the water and nutrients you have lost.

Mouth, gum, and throat problems

Good mouth care is important during cancer treatment. Chemo can cause sores in the mouth and throat. It can make these areas dry and irritated or cause them to bleed. Mouth sores are not only painful, but they can also become infected by the many germs that normally live in your mouth. Infections can be hard to fight during chemo and can lead to serious problems. It's important to take every possible step to prevent them.

Ways to help keep your mouth, gums, and throat healthy:

- Have your teeth cleaned at least 2 weeks before you start chemo, and take care of any cavities, abscesses, gum disease, or poorly fitting dentures. This will give you time to heal from any procedures that are needed.
- Ask your dentist to show you the best ways to brush and floss your teeth during chemo.
- Ask about a daily fluoride rinse or gel to help prevent decay because chemo can make you more likely to get cavities.
- Brush your teeth and gums after every meal. Use an extra-soft bristle toothbrush and a gentle touch; brushing too hard can damage soft mouth tissues.
- Ask your dentist to suggest a special type of toothbrush, floss or dental ribbon, and toothpaste if your gums are very sensitive.
- Rinse your toothbrush well after each use, and store it in a dry place.
- Avoid commercial mouthwashes. They often contain irritants such as alcohol. Instead, ask your doctor or nurse about a mild mouthwash to help prevent mouth infections.

If you develop sores in your mouth (this is called *stomatitis*), tell your doctor or nurse right away because you may need treatment. Be sure to let the doctor know if the sores are painful or if they keep you from eating normally.

If the sores are painful or keep you from eating, try these tips:

- Ask your doctor if there is anything you can put right on the sores to treat them and if there is medicine you can take to ease the pain.
- Eat foods cold or at room temperature. Hot and warm foods can irritate a tender mouth and throat.
- Choose soft, soothing foods, such as ice cream, milk shakes, baby food, soft fruits (like bananas and applesauce), mashed potatoes, cooked cereals, soft-boiled or scrambled eggs, cottage cheese, macaroni and cheese, custards, puddings, and gelatin. You also can puree cooked foods in the blender to make them smoother and easier to eat.
- Avoid irritating, acidic foods, such as tomatoes, citrus fruit, and citrus fruit juice (orange, grapefruit, and lemon); spicy or salty foods; and rough, coarse, or dry foods like raw vegetables, pretzels, granola, and toast.

If your mouth is dry and it bothers you or makes it hard for you to eat, try these tips:

- Ask your doctor if you should use an artificial saliva product to moisten your mouth.
- Drink plenty of liquids.

- Suck on ice chips, Popsicles, or sugarless hard candy.
- Chew sugarless gum.
- Moisten dry foods with butter, margarine, gravy, sauces, or broth.
- Dunk crisp, dry foods in mild liquids.
- Eat soft and pureed foods.
- Use lip balm if your lips become dry.

Nerve and muscle problems

Certain chemo drugs can cause *peripheral neuropathy*, a nerve problem that causes tingling, pins and needles, burning sensations, weakness, and/or numbness in your hands and feet.

You may feel any of these nerve-related symptoms:

- Loss of balance
- Clumsiness
- Trouble picking up things and buttoning clothing
- Problems walking
- Jaw pain
- Hearing loss
- Vision changes
- Stomach pain
- Constipation

Along with affecting the nerves, certain chemo drugs can affect the muscles and make them weak, tired, or sore.

Nerve and muscle effects are frustrating, yet in most cases they are not serious if caught early. They are usually short term and will get better after treatment is done. Still, it is important to tell your doctor about any nerve or muscle symptoms right away. They can get worse and become quite painful if left untreated. Your doctor might want to stop the chemo for awhile or offer you treatment to ease these symptoms.

Caution and common sense can help you deal with nerve and muscle problems.

Follow these tips:

- If your fingers become numb, for example, be very careful when handling objects that are sharp, hot, or otherwise dangerous.

- If your sense of balance is affected, move carefully, use handrails on stairs, and use a bath mat in the tub or shower.

For more information see our document called *Peripheral Neuropathy Caused by Chemotherapy*.

Skin and nail changes

You may have minor skin problems during treatment, including color changes, redness, itching, peeling, dryness, rashes, and acne.

You can take care of most of these problems yourself using these tips:

- If you develop acne, try to keep your face clean and dry.
- To help avoid dryness, take quick, warm showers rather than long, hot baths.
- Apply creams or lotions after bathing, while your skin is still moist.
- Do not use perfume, cologne, or aftershave lotion. These products often contain alcohol, which can make your skin dry.
- For itching, try cornstarch.

When given through an IV, certain chemo drugs may darken your skin along the vein. This discoloration will usually fade over time after treatment ends.

Most skin problems are not serious, but a few need to be taken care of right away. For example, certain drugs given through an IV can cause serious, long-term tissue damage if they leak out of the vein. Tell your doctor or nurse right away if you notice swelling or feel any burning or pain near your IV site when you are getting IV drugs. These symptoms don't always mean there's a problem, but they should always be checked out right away.

Let your doctor or nurse know right away if you develop sudden or severe itching, if your skin breaks out in a rash or hives, or if you start wheezing or have any other trouble breathing. These symptoms may mean you are having an allergic reaction that needs attention right away.

Some chemo drugs may make your skin more sensitive to the sun. Check with your doctor or nurse about using sunscreen. You may need to completely avoid direct sunlight. Wear long-sleeved cotton shirts, pants, and wide-brimmed hats to block the sun.

Your nails may become darkened, brittle, or cracked, or they may develop vertical lines or bands. Protect your nails by wearing gloves when washing dishes, gardening, or doing other work around the house. Some over-the-counter products might strengthen your nails, but these products may also cause irritation.

Get advice from your doctor if any skin and nail problems don't respond to your efforts. Be sure to let your doctor know if you have redness, pain, or changes around your cuticles or any other skin problems that you are worried about.

Urine changes and bladder and kidney problems

Some chemo drugs can irritate your bladder or cause short- or long-term kidney damage. They may also cause your urine to change color (orange, red, green, or yellow) or take on a strong or medicine-like odor. For a short time, the color and odor of semen may be changed, too. (See the section for men under “Sex, fertility, and chemo.”)

Ask your doctor if your chemo may have these effects. And let your doctor know if you have any symptoms that might be a sign of a problem. Watch for these signs and symptoms:

- Pain or burning when you urinate
- Urinating a lot
- A feeling that you must urinate right away
- Reddish or bloody urine (Some chemo drugs will change the color of your urine. Tell your doctor or nurse if this happens.)
- Fever
- Chills

Drink plenty of fluids to ensure good urine flow and help prevent problems. Water, juice, coffee, tea, soup, soft drinks, broth, ice cream, Popsicles, and gelatin count as fluids.

Weight gain

Some people, usually women, put on weight during chemo. We are not sure why this happens, but it may have to do with intense food cravings that develop despite the nausea. The average weight gain for women is about 7 pounds.

Whether you gain weight or not, good nutrition is very important during treatment. People who eat well cope with side effects better and are better able to fight infection. Their bodies can also rebuild healthy tissues faster.

Eating well during chemo means choosing a balanced diet that contains all the nutrients your body needs. You should include foods from each of the following food groups: fruits and vegetables; poultry, fish, and meat; cereals and breads; and dairy products. You also should take in enough calories to keep your weight up and, most importantly, enough protein to build and repair skin, hair, muscles, and organs.

You also may need to drink extra fluid to protect your bladder and kidneys during your treatment.

Other questions you may have

Can I drink alcohol?

Small amounts of alcohol can help you relax and increase your appetite. But alcohol may interact with some drugs so that they don't work as well, or it may make the side effects worse. Be sure to ask your doctor if you can drink beer, wine, or any other alcoholic beverages.

Should I take vitamin or mineral supplements?

There is no single answer to this question, but one thing is clear: No diet or nutritional plan can “cure” cancer. Taking vitamin and mineral supplements or any other *complementary and alternative medicine* should never take the place of medical care. You should not take any supplements without talking to your doctor first.

For more information, please call us or visit our Web site to get our documents called *Guidelines for Using Complementary and Alternative Methods* and *Complementary and Alternative Methods for Cancer Management*.

What is radiation recall?

If you have had radiation treatments before, you could develop radiation recall. During or shortly after you get certain chemo drugs, the skin over the area that was treated with radiation may turn red – a shade anywhere from light to very bright – and may itch or burn. This is radiation recall, and the reaction may last hours or even days. You can soothe the itching and burning by putting a cool, wet compress over the affected area. Tell your doctor or nurse about any skin irritation or changes. Skin that has had radiation always should be protected from the sun.

When to call your doctor

At this time, you are likely more in tune with your body than you ever have been in your life. You notice every physical change and imbalance. Do not take any physical symptoms you may have lightly.

Some side effects are fleeting and minor, but others may be a sign of serious problems. You should not be the judge. Tell your doctor right away if you suffer from any of the following symptoms during your chemo treatment:

- A fever of 100.5°F or greater
- Bleeding or unexplained bruising
- A rash or allergic reaction, such as swelling of the mouth or throat, severe itching, trouble breathing or swallowing

- Intense chills
- Pain or soreness at the chemo injection site or catheter site
- Unusual pain, including intense headaches
- Shortness of breath
- Long-lasting diarrhea or vomiting
- Bloody stool or blood in your urine

Sex, fertility, and chemo

Chemo can, but does not always affect sexual organs and how they work. The possible side effects depend on the drugs used, your age, and your overall health.

Men

Chemo may lower the number of sperm cells, reduce their ability to move, or cause other changes. These changes can result in short- or long-term infertility. Infertility makes a man unable to father a child, but it does not affect his ability to have sex.

Because permanent sterility (infertility) may occur, it's important to discuss this issue with your doctor **BEFORE** you begin chemo. You might want to think about banking your sperm for future use.

Men who are getting chemo should use condoms or other forms of birth control during treatment because chemo may have harmful effects on the *chromosomes* of sperm cells. Ask your doctor when you can stop using birth control for this reason. You may also need to protect your partner, since some chemo drugs may be present in your semen during and just after you get chemo. Ask your doctor about this.

Women

Chemo can damage the ovaries and reduce the amount of *hormones* they produce. As a result, you may have these side effects:

- Your menstrual periods may become irregular or stop completely during treatment. They may – or may not – come back after chemo. In some women, they come back, but menopause may start at a younger age than expected.
- You may have menopause-like symptoms, such as hot flashes and itching, burning, or dryness of vaginal tissues. These tissue changes can make sex uncomfortable, which can often be relieved by using a water-based vaginal lubricant.
- You may be more likely to get vaginal infections. To help prevent infection, avoid oil-based lubricants (like petroleum jelly or lotions), always use a condom for sex, wear cotton underwear and pantyhose with a ventilated cotton lining, and don't wear

tight slacks or shorts. Your doctor also may prescribe a vaginal cream or suppository to reduce the chances of infection. If you do get an infection, it should be treated right away.

- You may become infertile (unable to become pregnant). Whether this happens and how long it lasts depends on many factors, including the type of drug, the doses given, and your age. It is important to discuss this possibility BEFORE you start treatment.

Pregnancy and chemo

Pregnancy is often possible during chemo, but it should be avoided because some chemo may cause birth defects. Doctors advise women of childbearing age – from the teens through the end of menopause – to use birth control throughout treatment. If a woman is pregnant when her cancer is discovered, it may be possible to delay chemo until after the baby is born. For a woman who needs treatment sooner, the doctor may suggest starting chemo after the 12th week of pregnancy, when the fetus is beyond the stage of greatest risk. In some cases, termination of the pregnancy may be considered.

Talk to your doctor if you and your partner are considering pregnancy after completing chemo.

What about my sex life?

Some people feel closer than ever to their partners and have an increased desire for sex during treatment. Some notice little or no change in their sexual desire and energy level. Still others find that their sexual interest declines because of the physical and emotional stresses of having cancer and getting chemo. These stresses may include:

- Worries about changes in how you look
- Anxiety about health, family, or finances
- Side effects, including tiredness and hormone changes

A partner's concerns or fears also can affect the sexual relationship. Some may worry that physical intimacy will harm the person who has cancer. Others may fear that they might "catch" the cancer or be affected by the drugs.

You and your partner can clear up many of these misunderstandings by talking about sexual concerns with your doctor, nurse, or a counselor. Though you may find it hard to do, talk to a health professional who can give you the information and the reassurance you need.

You and your partner also should try to share your feelings with one another. If it's hard for you to talk to each other about sex or cancer, or both, you may want to talk to a counselor who can help you communicate more openly.

If you were comfortable with and enjoyed sex before starting treatment, chances are you will still find pleasure in physical intimacy during treatment. But you may find that

intimacy takes on new meaning. Hugging, touching, holding, and cuddling may become more important, while sexual intercourse may become less important.

For more information, please see our booklets called *Sexuality for the Woman With Cancer* and *Sexuality for the Man With Cancer*.

Thoughts, emotions, and chemo

What about my memory and thinking?

Research has shown that chemo can impact the thinking functions of the brain (known as cognitive functioning) for up to 10 years after treatment. Some of the brain's activities that are affected are concentration, memory, comprehension (understanding), and reasoning. The changes that are found in patients are often very subtle, but the people who have these problems are very aware of the changes in their ability to think.

Patients who have had chemo and have problems with thinking, memory, or concentration often call it chemo brain or chemo-fog. Some people report having these symptoms even before they start treatment. Others report it even though they have not had chemo. Still others notice the problem when they are getting hormone treatments. So the term "chemo brain" may not be completely accurate, but it is the name that most people call it right now. It does seem to happen more with high doses of chemo, and some drugs have been found to affect the brain. But at this time, there is no sure way to prevent it.

Researchers are currently studying the problem. They are looking for more information to help prevent and treat chemo brain. But just being aware that problems with thinking can happen may help patients and their family members feel less isolated and alone.

If you have problems with thinking that interfere with your daily life, there are memory retraining exercises and programs, as well as other treatments that may help you retain or improve your memory and problem-solving abilities. You can also learn strategies that may help you cope with the loss of cognitive function. Ask your doctor if he or she can recommend a health professional who can help. You can get more information in our document called *Chemo Brain*.

What emotional effects can I expect?

Chemo can bring major changes to your life. It can affect your overall health, threaten your sense of well-being, disrupt your daily routines, and put a strain on your relationships. It is normal and understandable for you and your family to feel sad, anxious, angry, or depressed.

There are ways to cope with these emotional side effects, just as there are ways to cope with the physical side effects.

Finding support

You can draw support from many sources. Here are some of the most important ones:

Doctors and nurses

If you have questions or worries about your cancer treatment, talk with members of your health care team. If they are unable to give you the help you need, they can refer you to other health professionals who can help you.

Counseling and mental health professionals

Counselors can help you express, understand, and cope with the emotions caused by cancer treatment. Depending on what you want and need, you might want to talk with a psychiatrist, psychologist, social worker, sex therapist, or member of the clergy.

Friends and family

Talking with friends or family members may help you feel a lot better. Often, they can comfort and reassure you in ways that no one else can. But you may find that you have to make the first move. Many people do not understand cancer and may withdraw from you because they're afraid of your illness. Others may worry that they will upset you by saying the wrong thing.

You can help relieve these fears by talking openly with others about your illness, your treatment, your needs, and your feelings. You can correct mistaken ideas and let people know that there's no one "right" thing to say. Once people know they can talk with you honestly, they may be more willing and able to open up.

Support groups

Support groups are made up of people who are going through the same kinds of experiences you are. Many people with cancer find they can share thoughts and feelings with group members more easily than with anyone else. Support groups can also be an important source of practical information about living with cancer.

You can also find support in one-to-one programs that match you with a person like you in age, gender, type of cancer, and so forth. You might talk with this person online, on the phone, or arrange visits.

Where to find information about support programs:

- Your hospital's social work department
- Your local American Cancer Society office or by calling us at 1-800-227-2345

Coping tips for everyday life

- Try to keep your treatment goals in mind. This can help you keep going on days when it gets rough.

- Eating well is very important. Your body needs food to rebuild tissues and regain strength.
- Learn as much as you want to know about your disease and its treatment. This can lessen your fear of the unknown and increase your feeling of control.
- Exercise if you can and if your doctor says it's OK. Using your body can help you fight fatigue, build your appetite, and make you feel better about yourself.
- Keep a journal or diary while you're being treated. A record of your activities and thoughts can help you understand the feelings you have as you go through treatment. It may also help highlight questions you need to ask your doctor or nurse. You can use your journal to record side effects. This will help you when you talk about them with your doctor and nurse. Write down the steps you take to cope with side effects and how well those steps work, too. That way, you'll know what worked best for you in case you have the same side effects again.
- Try new hobbies or go back to one you loved before. Learn new skills.
- Take it easy. You may not have as much energy as usual, so try to get as much rest as you can. Let the small stuff slide and only do the things that are most important to you.

How can I relieve stress and relax?

Simple techniques can help you cope with stress and help you relax. Try some of these methods to find the ones that work best for you. You may want to check with your doctor before using any of these, especially if you have lung problems.

Muscle tension and release

- Lie down in a quiet room.
- Take a slow, deep breath.
- As you breathe in, tense a muscle or group of muscles. For example, clench your teeth or stiffen your arms or legs.
- Keep your muscles tense for a second or 2 while holding your breath.
- Then breathe out, release the tension, and let your body relax completely.
- Repeat the process with another muscle or muscle group.

Another way to do this is called progressive relaxation. You work your way up your body starting with the toes of one foot. Contract then relax all the muscles of one leg. Do the same with the other leg. Work your way up your body, contracting then relaxing each of the muscle groups in your body, including those in your neck and face. Remember to hold your breath while briefly contracting your muscles and to breathe out when releasing the tension.

Rhythmic breathing

- Get into a comfortable position and relax all your muscles.
- Close your eyes, or focus on a distant object if you prefer to keep them open.
- Breathe in and out slowly and comfortably through your nose. If you like, keep the rhythm steady by saying to yourself, “In, 1, 2. Out, 1, 2.”
- Feel yourself relax and go limp each time you breathe out.
- You can continue this for just a few seconds or for up to 10 minutes.

Biofeedback

With biofeedback training, you can control body functions such as heart rate, blood pressure, and muscle tension. A machine will sense and alert you when your body shows signs of tension. The machine will also give you feedback when you relax your body. With time and practice, you will learn to control your relaxation responses without having to depend on feedback from the machine. Your doctor or nurse can refer you to someone trained in teaching biofeedback.

Mental imagery

- Close your eyes, breathe slowly, and feel yourself relax.
- Imagine a ball of healing energy – perhaps a white light – forming somewhere in your body.
- When you see the ball of energy, slowly breathe in and blow the ball to any part of the body where you feel pain, tension, or discomfort. When you breathe out, picture the air moving the ball away from your body, taking with it any painful or uncomfortable feelings. (Be sure to breathe naturally; don’t blow.)
- Continue to picture the ball moving toward you and away from you each time you breathe in and out. You may see the ball getting bigger and bigger as it takes away more and more tension and discomfort.

Visualization

Visualization is much like imagery. With visualization, you create an inner picture that represents your fight against cancer. You might visualize rockets blasting away the cancer cells in your body or knights in armor battling the cells.

Hypnosis

Hypnosis puts you in a trance-like state that can help reduce discomfort and anxiety. You can be hypnotized by a qualified person, or you can learn how to hypnotize yourself. If

you are interested in learning more, ask your doctor or nurse to refer you to someone trained in the technique.

Distraction

Distract yourself from your worries or discomforts by watching TV, listening to the radio, reading, going to the movies, or working with your hands by doing needlework or puzzles, building models, or painting. You may be surprised how comfortably the time passes.

Paying for chemo treatment

How do I pay for my chemo?

The cost of chemo varies with the kinds of drugs used, how long and how often they are given, and whether you get them at home, in a clinic, office, or hospital. Most health insurance policies, including Medicare Part B, cover at least part of the cost of most kinds of chemo.

To reduce their costs, private insurance companies are more often deciding not to pay for the use of some chemo drugs. They may do this even if those drugs are proven cancer therapies. Before you begin treatment, find out whether your health insurance will pay for your care.

For more information on how to keep control of your finances so you can better focus your energies on treatment and recovery, see our booklet called *In Treatment: Financial Guidance for Cancer Survivors and Their Families*.

You can also learn more about health insurance in our documents called *Health Insurance and Financial Assistance for the Cancer Patient* or *Children Diagnosed With Cancer: Financial and Insurance Issues*.

What do I need to know about insurance coverage?

Insurance companies may deny payment for chemo for these reasons:

- They may not be aware of new treatments.
- They may limit the selection of drugs that doctors can use for chemo.
- They may restrict payment to the uses first approved by the Food and Drug Administration (FDA).

If you are going to take part in a clinical trial, find out if your insurance will cover any of the costs. In some cases, insurers may deny payment. Coverage may vary by state.

If your insurer denies payment for your treatment, don't give up. Most people do get payment if they keep working on it.

What do I do if my claim is not paid?

- Tell your health care team if you have been denied payment so that they can contact your insurer and help answer any questions.
- Ask the staff at your doctor's office to provide your insurance company with the results of scientific studies showing that a certain drug works for your type of cancer.
- Ask hospitals and cancer centers to provide information like this, too. These actions are often enough to get your claim paid.
- Contact reimbursement specialist hotlines at pharmaceutical companies.

In some states, Medicaid (which makes health care services available for people with financial need) may help pay for certain treatments. Contact the office that handles social services in your city or county to find out if you are eligible for Medicaid and whether your chemo is a covered expense. Medicaid approval can take a long time, so begin the process as early as possible.

You can also contact your hospital's social service office, which may be able to direct you to other sources of help.

A last alternative may be to sue the insurance company to get payment for your cancer treatment. In many cases, courts have sided with patients and ordered insurance companies to pay for a patient's treatment.

Always ask your doctor and nurse any questions you have about your chemo. Open and honest talks between you, your family, and your cancer care team are the best way to understand what is happening to you, your body, and the cancer.

And the American Cancer Society can help you, too. Contact us anytime, day or night, for cancer-related information and support. Call us at **1-800-227-2345**, or visit www.cancer.org. We want to help you get well and stay well.

Glossary

These are some words that you may hear your health care team use.

Adjuvant therapy: Treatment used in addition to main treatment. It usually refers to hormone therapy, chemo, radiation therapy, or immunotherapy given after surgery to increase the chances of curing the disease or keeping it in check.

Alopecia: Hair loss, which can be all over the body. It is often caused by chemo, and hair usually grows back after treatment ends.

Anemia: Having too few red blood cells or a low red blood cell count. Symptoms of anemia include feeling tired, weak, and short of breath.

Anti-emetic: A medicine to prevent or control nausea and vomiting

Benign: Non-cancerous, or not cancer

Blood cell count: The number of red blood cells, white blood cells, and platelets in a sample of blood. This is also called a complete blood count or CBC.

Bone marrow: The inner, spongy tissue of bones where blood cells are made

Cancer: A general term for more than 100 diseases in which abnormal cells grow out of control, such as a malignant or cancerous tumor. The term is also used to describe uncontrolled growth of abnormal cells in the blood or lymph system.

Catheter: A thin, flexible tube. Doctors use these to put fluids into your body or as a way for fluids to leave your body.

Central venous catheter (CVC): A special thin, flexible tube placed in a large vein, usually in the chest, neck, or upper arm to allow easier access to the vein. It can remain there for as long as it is needed to put in and take out fluids. There are many different types of CVCs.

Chemotherapy: The use of drugs to treat disease. The term most often refers to drugs used to treat cancer. It is often called chemo.

Chromosomes: Threadlike bodies that carry genetic information. They are found in the nucleus, or center part, of a cell.

Clinical trials: Medical research studies done in patient volunteers. Each study is designed to answer scientific questions and find better ways to detect, prevent, or treat cancer or its side effects.

Combination chemotherapy: The use of more than one chemo drug to treat cancer

Complementary and alternative medicine (CAM): Ways of dealing with disease other than those used by doctors in standard medicine. This term covers a broad range of tested and untested methods, such as herbs/vitamins/minerals, mind/body/spirit, diet and nutrition, physical touch, and biological methods.

Fatigue: The feeling of being tired physically, mentally, and emotionally. Cancer-related fatigue persists over time and can interfere with usual activities. This fatigue is different from the fatigue of everyday life, which is usually short term and relieved by rest.

Growth factors: Also known as colony-stimulating factors, growth factors are substances that stimulate the production of blood cells in the bone marrow. They can help the blood-forming tissue recover from the effects of chemo and radiation therapy. Growth factors can also refer to proteins that occur naturally in the body that cause cells to grow and divide

Hormones: Natural substances released by an organ that can influence the function of other organs in the body and the growth of some types of cancer

Infusion: Slow and/or prolonged intravenous (IV) delivery of a drug or fluids

Injection: Using a syringe and needle to push fluids or drugs into the body; often called a shot

Intra-arterial: Into an artery

Intracavitary: Into a cavity or space – most often the abdomen (belly), pelvis, or the chest

Intralesional: Into a tumor

Intramuscular (IM): Into a muscle

Intrathecal (IT): Into the spinal fluid (also called cerebrospinal fluid or CSF)

Intravenous (IV): Into a vein

Malignant: Cancerous

Metastasis/Metastasize: The spread of cancer cells to other areas of the body, often through the lymph system or bloodstream

Neoadjuvant therapy: Systemic therapy, such as chemotherapy, hormone therapy, or radiation therapy, given before the main treatment is done

Orally (PO): Taken by mouth

Peripheral neuropathy: Damage to the nervous system that usually begins in the hands and/or feet with symptoms of numbness, tingling, burning, and/or weakness. It can be caused by some chemo drugs.

Platelets (Plts): Special blood cells that plug up damaged blood vessels and help blood clot to stop bleeding

Port: A type of central venous catheter (CVC) that is a drum-shaped device surgically placed under the skin of the chest or upper arm. The attached catheter extends into a large or central vein. The port is accessed through the skin with a special needle and can be used to draw blood or give fluids, drugs, or blood products.

Radiation therapy: The use of high-energy rays or subatomic particles to treat disease. Types of radiation include x-ray, electron beam, alpha and beta particles, and gamma ray.

Red blood cells (RBCs): Cells that carry oxygen from the lungs to tissues throughout the body

Remission: The partial or complete disappearance of signs and symptoms of disease

Stomatitis: Sores on the lining of the mouth

Topical: Put right on the skin

Tumor: An abnormal growth (lump or mass) of cells or tissues. Tumors are either benign (not cancer) or malignant (cancer).

White blood cells (WBCs): The blood cells that fight infection

More information from your American Cancer Society

The following information may also be helpful to you. These free materials may be ordered from our toll-free number, 1-800-227-2345, or read on our Web site, www.cancer.org.

After Diagnosis: A Guide for Patients and Families (also available in Spanish)

Anemia in People With Cancer

Caring for the Patient With Cancer at Home: A Guide for Patients and Families (also available in Spanish)

Chemo Brain

Chemotherapy Principles: An In-depth Discussion of the Techniques and Its Role in Cancer Treatment

Chemotherapy Side Effects Worksheet

Children Diagnosed With Cancer: Financial and Insurance Issues

Clinical Trials: What You Need To Know (also available in Spanish)

Complementary and Alternative Methods for Cancer Management (also available in Spanish)

Distress in People With Cancer

Fatigue in People With Cancer

Fertility and Cancer: What are My Options?

Guidelines for Using Complementary and Alternative Methods

Helping Children When a Family Member Has Cancer: Dealing With Treatment (also available in Spanish)

Health Insurance and Financial Assistance for the Cancer Patient (also available in Spanish)

In Treatment: Financial Guidance for Cancer Survivors and Their Families (also available in Spanish)

Nausea and Vomiting

Nutrition for Children With Cancer (also available in Spanish)

Nutrition for the Person With Cancer During Treatment: A Guide for Patients and Families (also available in Spanish)

Oral Chemotherapy: What You Need to Know

Peripheral Neuropathy Caused By Chemotherapy

Sexuality for the Man With Cancer (also available in Spanish)

Sexuality for the Woman With Cancer (also available in Spanish)

Talking With Your Doctor (also available in Spanish)

Books

The following books are available from the American Cancer Society. Call us at 1-800-227-2345 to ask about costs or to place your order.

Because Someone I Love Has Cancer: Kids Activity Book (for kids ages 4 to 12)

Cancer in the Family (for parents with cancer)

Caregiving: A Step-by-Step Approach for Caring for the Person With Cancer at Home

Chemo & Me: My Hair Loss Experience (for women)

Couples Confronting Cancer

I Can Survive!

What Helped Get Me Through: Cancer Patients Share Wisdom and Hope

What to Eat During Cancer Treatment (cookbook)

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For additional assistance please contact your American Cancer Society
1 · 800 · ACS-2345 or www.cancer.org