

Patient Care Guide



PeaceHealth

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PeaceHealth Ketchikan Important Phone Numbers Infusion Suite

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PeaceHealth Ketchikan Infusion Center	907-228-8300 #1 x7865
Chemotherapy Nurse Line	907-228-8300 #1 x7865
Schedule an Infusion Center Appointment	907-228-8300 #1 x7865
Schedule an Oncology Clinic Appointment	907-228-8101
Cornelia “Pinky” Brindle Cancer Resource Center	907-228-8300 #1 x8830

Summary of Diagnosis and Treatment Information

Diagnosis _____

Date of diagnosis _____

Stage of cancer _____

Staging information _____

Hormone tests, tumor markers or other important information _____

Treatment recommendations

Surgery _____

Radiation therapy _____

Chemotherapy _____

Hormone therapy _____

Other treatments _____

Goals of treatment _____



Quick Reference for Symptoms

Areas of Concern	Critical Emergency Dial 911	Call Clinic Now
Alertness, Consciousness, Activity	<ul style="list-style-type: none"> ▪ Unconscious ▪ Unable to arouse ▪ Seizure ▪ Sudden change in vision ▪ Numbness, tingling or loss of movement in limbs 	<ul style="list-style-type: none"> ▪ New or increased confusion ▪ Change in level of alertness ▪ Mood changes: irritable, tearful, agitated ▪ Sleeplessness ▪ Falling down ▪ Dizziness ▪ Lethargic ▪ Change in energy level ▪ Tremors/Shakiness ▪ Not able to get around ▪ Difficulty swallowing
Bleeding	<ul style="list-style-type: none"> ▪ Uncontrollable bleeding ▪ Patient is unconscious 	<ul style="list-style-type: none"> ▪ New or increased bleeding ▪ Bloody urine ▪ New bruising ▪ Little red or purple spots on the skin ▪ Unable to stop nosebleed ▪ Bloody diarrhea ▪ Vomiting of blood ▪ 1 or more feminine pads per hour is used
Blood Sugar	<ul style="list-style-type: none"> ▪ Blood sugar more than 300 or lower than 50 	<ul style="list-style-type: none"> ▪ High or low blood sugar ▪ Hard to wake up – use glucagon
Breathing	<ul style="list-style-type: none"> ▪ Not breathing ▪ Choking – not moving air into chest 	<ul style="list-style-type: none"> ▪ Trouble breathing ▪ Gets “winded” more easily with minimal activity ▪ Feeling as if can’t get enough air ▪ Trouble breathing when lying flat ▪ Wheezing with breaths ▪ New or recurrent cough ▪ Persistent continuous cough ▪ Coughing blood or green/yellow material

Central Line (Port-a-cath or PICC line)	<ul style="list-style-type: none"> ▪ Line open to air and patient short of breath (if applicable, clamp line immediately) 	<ul style="list-style-type: none"> ▪ Face, neck, exit site swelling ▪ New redness, swelling or tenderness at exit site ▪ Drainage from exit site
Diarrhea		<ul style="list-style-type: none"> ▪ Constant or uncontrolled diarrhea ▪ New onset diarrhea ▪ Diarrhea with fever and abdominal cramping ▪ Whole pills passed in stool ▪ Greater than 8 times each day or unrelieved with antidiarrheal ▪ Stool which is bloody, burgundy or black ▪ Abdominal cramping
Fall	<ul style="list-style-type: none"> ▪ Hit head during fall ▪ Change in consciousness after fall 	<ul style="list-style-type: none"> ▪ Did not hit head and no changes in consciousness after fall
Fatigue	<ul style="list-style-type: none"> ▪ Unable to wake up 	<ul style="list-style-type: none"> ▪ Dizziness ▪ Fatigue is getting worse ▪ Too tired to get out of bed or walk to the bathroom ▪ Staying in bed all day
Fever/Chills		<ul style="list-style-type: none"> ▪ Shaking chills, temperature may be normal ▪ Temperature greater than 100.5F by mouth ▪ Fever greater than 1 degree above usual if on steroids ▪ Cold symptoms (runny nose, watery eyes, sneezing, coughing)
Mouth Pain/ Mucositis	<ul style="list-style-type: none"> ▪ Not breathing ▪ Severe difficulty breathing 	<ul style="list-style-type: none"> ▪ Difficulty breathing ▪ Bright red blood in mouth ▪ Pain not controlled by medication ▪ White patches or sores appear on

Nausea Vomiting		<ul style="list-style-type: none"> ▪ Nausea that persists without control from anti-nausea medications ▪ Projectile vomiting ▪ Uncontrolled, constant nausea and vomiting ▪ Blood or "coffee ground" appearing material in the vomit ▪ Medicine not kept down because of vomiting ▪ Weakness or dizziness along with nausea/vomiting ▪ Severe stomach pain while vomiting
Pain	<ul style="list-style-type: none"> ▪ Severe chest/arm pain ▪ Severe squeezing or pressure in chest ▪ Severe sudden headache 	<ul style="list-style-type: none"> ▪ New or uncontrolled pain ▪ New headache ▪ Chest discomfort ▪ Pounding heart ▪ Heart "flip-flop" feeling ▪ Painful Central Line site or area of "tunnel" ▪ Burning in chest or stomach ▪ Pain or burning while urinating ▪ Pain with infusion of medications or fluids into Central Line
Rash		<ul style="list-style-type: none"> ▪ New Rash ▪ Rash with pain and or itching
Swelling	<ul style="list-style-type: none"> ▪ Throat swollen with feeling unable to get a breath 	<ul style="list-style-type: none"> ▪ Sudden swelling with or without pain ▪ Swollen legs, arms and hands
Urination		<ul style="list-style-type: none"> ▪ Unable to urinate for more than 8 hours ▪ Bloody urine ▪ Pain or burning while urinating

WHAT YOU NEED TO KNOW

NEUTROPENIA AND RISK FOR INFECTION

WHAT IS NEUTROPENIA?

Neutropenia, pronounced noo-troh-PEE-nee-uh, is a decrease in the number of white blood cells. These cells are the body's main defense against infection. Neutropenia is common after receiving chemotherapy and increases your risk for infections.

Why does chemotherapy cause neutropenia?

These cancer-fighting drugs work by killing fast-growing cells in the body—both good and bad. These drugs kill cancer cells as well as healthy white blood cells.

How do I know if I have neutropenia?

Your doctor or nurse will tell you. Because neutropenia is common after receiving chemotherapy, your doctor may draw some blood to look for neutropenia.

When will I be most likely to have neutropenia?

Neutropenia often occurs between 7 and 12 days after you receive chemotherapy. This period can be different depending upon the chemotherapy you get. Your doctor or nurse will let you know exactly when your white blood cell count is likely to be at its lowest. You should carefully watch for signs and symptoms of infection during this time.

How can I prevent neutropenia?

There is not much you can do to prevent neutropenia from occurring, but you can decrease your risk for getting an infection while your white blood cell count is low.

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Division of Cancer Prevention and Control



Made possible by a CDC Foundation partnership with Amgen

What are the signs and symptoms of an infection?

For patients with neutropenia, even a minor infection can quickly become serious. Call your doctor right away if you have:

- Fever that is 100.4°F (38°C) or higher for more than one hour, or a one-time temperature of 101° F or higher.
- Chills and sweats.
- Change in cough or new cough.
- Sore throat or new mouth sore.
- Shortness of breath.
- Nasal congestion.
- Stiff neck.
- Burning or pain with urination.
- Unusual vaginal discharge or irritation.
- Increased urination.
- Redness, soreness, or swelling in any area, including surgical wounds and ports.
- Diarrhea.
- Vomiting.
- Pain in the abdomen or rectum.
- New onset of pain.
- Changes in skin, urination, or mental status.

How can I prevent an infection?

In addition to receiving treatment from your doctor, the following suggestions can help prevent infections:

- Clean your hands frequently.
- Try to avoid crowded places and contact with people who are sick.
- Do not share food, drink cups, utensils or other personal items, such as toothbrushes.
- Shower or bathe daily and use an unscented lotion to prevent your skin from becoming dry and cracked.
- Cook meat and eggs all the way through to kill any germs.
- Carefully wash raw fruits and vegetables.
- Protect your skin from direct contact with pet bodily waste (urine or feces) by wearing vinyl or household cleaning gloves when cleaning up after your pet. Wash your hands immediately afterwards.
- Use gloves for gardening.
- Clean your teeth and gums with a soft toothbrush, and if your doctor or nurse recommends one, use a mouthwash to prevent mouth sores.
- Try and keep all your household surfaces clean.
- Get the seasonal flu shot as soon as it is available.

What if I have to go to the emergency room?

Cancer patients receiving chemotherapy should not sit in a waiting room for a long time. While you are receiving chemotherapy, fever may be a sign of infection. Infections can become serious very quickly. When you check in, tell them right away that you are getting chemotherapy and have a fever. This may be an indication of an infection.



To learn more about CDC's new resources, please visit cdc.gov/cancer/preventinfections

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GETTING CHEMO?

TOP 5 THINGS TO KNOW ABOUT NEUTROPENIA

A low white blood cell count, or neutropenia, can put people with cancer at risk for getting an infection.

Neutropenia is one of the most dangerous side effects of chemotherapy.

1 IT'S LIFE THREATENING

- 60,000 cancer patients in the U.S. are hospitalized each year because of this side effect.
- One in 14 (or 4,100) will die from this complication.*



2 YOU HAVE HIGH RISK DAYS

- You could develop neutropenia 7-12 days after each chemotherapy dose.



3 WHY CHEMO CAN PUT YOU AT RISK

- Chemo kills both normal (immune) and abnormal (cancer) cells in your body.
- When this happens, your risk of getting an infection goes up.



4 INFECTIONS CAN GET SERIOUS FAST

- Call your doctor immediately if you have a fever.
- If you have to go to the emergency room, tell the person checking you in that you have cancer and are getting chemo.



5 YOU CAN HELP PREVENT INFECTION



Wash your hands a lot.



Talk to your doctor or nurse about when you should get a flu shot.



Take a bath or shower every day and use an unscented lotion so your skin won't get dry or cracked.



Ask your doctor or nurse when your white blood cell count will be at its lowest.

Caggiano V, et al. *Cancer*. 2005; 103: 1916-1924.

Preventing Infections in Cancer Patients is a comprehensive initiative led by CDC and the CDC Foundation to reduce infections in cancer patients. For more information on this topic and to learn more about this program, please visit www.PreventCancerInfections.org.

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U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

1. What? PREPARE: Watch Out for Fever!		
When?	<p>You should take your temperature any time you feel warm, flushed, chilled or not well. If you get a temperature of 100.4°F (38°C) or higher for more than one hour, or a one-time temperature of 101° F or higher, call your doctor immediately, even if it is the middle of the night. DO NOT wait until the office re-opens before you call.</p> <p>You should also:</p> <ul style="list-style-type: none"> Find out from your doctor when your white blood cell count is likely to be the lowest since this is when you're most at risk for infection (also called nadir). 	<p>in that you are a cancer patient undergoing chemotherapy. If you have a fever, you might have an infection. This is a life threatening condition, and you should be seen in a short amount of time.</p>
Why?	<ul style="list-style-type: none"> If you develop a fever during your chemotherapy treatment it is a medical emergency. Fever may be the only sign that you have an infection, and an infection during chemotherapy can be life threatening. 	
2. What? PREVENT: Clean Your Hands!		
When?	<p>Keeping your hands clean is important in preventing infections. This should include you, all members of your household, your doctors, nurses and anyone that comes around you. Don't be afraid to ask people to clean their hands. If soap and water are not available, it's o.k. to use an alcohol-based hand sanitizer.</p>	<p>Clean your hands:</p> <ul style="list-style-type: none"> Before, during, and after cooking food Before you eat After going to the bathroom After changing diapers or helping a child to use the bathroom After blowing your nose, coughing, or sneezing After touching your pet or cleaning up after your pet After touching trash <ul style="list-style-type: none"> Before and after treating a cut or wound or caring for your catheter, port or other access device
Why?	<ul style="list-style-type: none"> Many diseases and conditions are spread by not cleaning your hands. Cleaning your hands is EXTREMELY important during chemotherapy treatment because your body can't fight off infections like it used to. 	
3. What? PROTECT: Know the Signs and Symptoms of an Infection!		
When?	<p>During your chemotherapy treatment, your body will not be able to fight off infections like it used to. Call your doctor immediately if you notice any of the following signs and symptoms of an infection:</p> <ul style="list-style-type: none"> Fever (this is sometimes the only sign of an infection) Chills and sweats Change in cough or new cough Sore throat or new mouth sore Shortness of breath 	<ul style="list-style-type: none"> Nasal congestion Stiff neck Burning or pain with urination Unusual vaginal discharge or irritation Increased urination Redness, soreness, or swelling in any area, including surgical wounds and ports Diarrhea Vomiting Pain in the abdomen or rectum New onset of pain Changes in skin, urination, or mental status <p>Find out from your doctor when your white blood cell count is likely to be the lowest since this is when you're most at risk for infection. This usually occurs between 7 and 12 days after you finish each chemotherapy dose—and will possibly last up to one week.</p>
Why?	<ul style="list-style-type: none"> When your counts are low, take even the slightest sign or symptom of an infection as serious and call your doctor immediately. Infection during chemotherapy can be very serious, and can lead to hospitalization or death. 	

Write the number(s) to call in an emergency here:

Doctor's daytime number:

Doctor's after-hours number:



Emergency Number Card

- Treat a fever as an emergency.
- Call your doctor immediately if you develop a fever.
- If you have to go to the emergency room, tell them right away that you are undergoing chemotherapy treatment.

Doctor's daytime number: _____

Doctor's after-hours number: _____

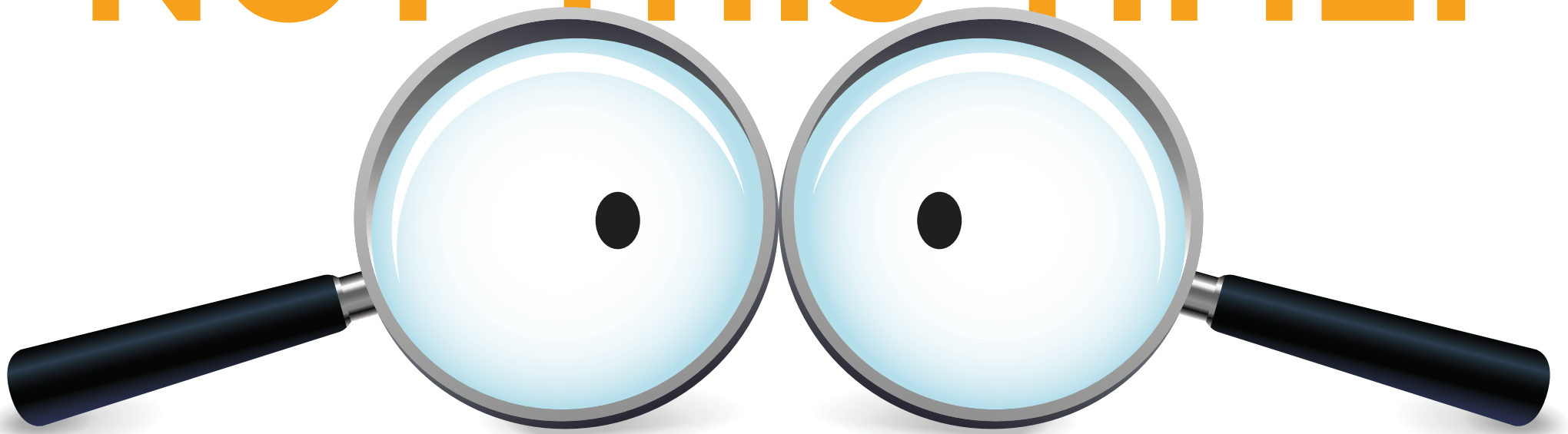
FEVER: TEMPERATURE OF 100.4°F (38°C) OR HIGHER FOR MORE THAN ONE HOUR OR A ONE-TIME TEMPERATURE OF 101° F OR HIGHER.

www.preventcancerinfections.org



Cut out the emergency number card. Fill in your doctor's information. Carry this card with you at all times.

OUT OF SIGHT, OUT OF MIND... **NOT THIS TIME!**



Did you know?

One of the most dangerous side effects of chemotherapy cannot be seen?

That's right, a low white blood cell count, or neutropenia, puts cancer patients at a higher risk for getting an infection.

An infection in people with cancer is an emergency. Be prepared, and remember the following three things during chemotherapy:

1. Treat a fever as an emergency, and call your doctor right away if you develop a fever.
2. Find out from your doctor when your white blood cell count will be the lowest because this is when you are most at risk for infection.
3. If you have to go to the emergency room, it's important that you tell the person checking you in that you have cancer and are receiving chemotherapy. If you have an infection you should not sit in the waiting room for a long time. Infections can get very serious in a short amount of time.



Learn more at: www.cdc.gov/cancer/preventinfections

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Support for People with Cancer

Chemotherapy and You



About this Book

Chemotherapy and You is written for you—someone who is about to receive or is now receiving chemotherapy for cancer. Your family, friends, and others close to you may also want to read this book.

This book is a guide you can refer to throughout your chemotherapy treatment. It includes facts about chemotherapy and its side effects and also highlights ways you can care for yourself before, during, and after treatment.

Rather than read this book from beginning to end—look at only those sections you need now. Later, you can always read more.

This book covers:

- ▶ **Questions and answers about chemotherapy.** Answers common questions, such as what chemotherapy is and how it affects cancer cells.
- ▶ **Side effects and ways to manage them.** Explains side effects and other problems that may result from chemotherapy. This section also has ways that you and your doctor or nurse can manage these side effects.
- ▶ **Tips for meeting with your doctor or nurse.** Includes questions for you to think about and discuss with your doctor, nurse, and others involved in your cancer care.
- ▶ **Ways to learn more.** Lists ways to get more information about chemotherapy and other topics discussed in this book—in print, online, and by telephone.

Talk with your doctor or nurse about what you can expect during chemotherapy. He or she may suggest that you read certain sections of this book or try some of the ways to manage side effects.

The Use of Product or Brand Names

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Questions and Answers about Chemotherapy

What is chemotherapy?

Chemotherapy (also called chemo) is a type of cancer treatment that uses drugs to destroy cancer cells.



How does chemotherapy work?

Chemotherapy works by stopping or slowing the growth of cancer cells, which grow and divide quickly. But it can also harm healthy cells that divide quickly, such as those that line your mouth and intestines or cause your hair to grow. Damage to healthy cells may cause side effects. Often, side effects get better or go away after chemotherapy is over.

What does chemotherapy do?

Depending on your type of cancer and how advanced it is, chemotherapy can:

Cure cancer—when chemotherapy destroys cancer cells to the point that your doctor can no longer detect them in your body and they will not grow back.

Control cancer—when chemotherapy keeps cancer from spreading, slows its growth, or destroys cancer cells that have spread to other parts of your body.

Ease cancer symptoms (also called palliative care)—when chemotherapy shrinks tumors that are causing pain or pressure.

How is chemotherapy used?

Sometimes, chemotherapy is used as the only cancer treatment. But more often, you will get chemotherapy along with surgery, radiation therapy, targeted therapy, or immunotherapy. Chemotherapy can:

- ▶ Make a tumor smaller before surgery or radiation therapy. This is called neo-adjuvant chemotherapy.
- ▶ Destroy cancer cells that may remain after surgery or radiation therapy. This is called adjuvant chemotherapy.
- ▶ Help radiation therapy and immunotherapy work better.
- ▶ Destroy cancer cells that have come back (recurrent cancer) or spread to other parts of your body (metastatic cancer).

How does my doctor decide which chemotherapy drugs to use?

This choice depends on:

- ▶ The type of cancer you have. Some types of chemotherapy drugs are used for many types of cancer. Other drugs are used for just one or two types of cancer.
- ▶ Whether you have had chemotherapy before.
- ▶ Whether you have other health problems, such as diabetes or heart disease.

Where do I go for chemotherapy?

You may receive chemotherapy during a hospital stay, at home, or in a doctor's office, clinic, or outpatient unit in a hospital (which means you do not stay overnight). No matter where you go for chemotherapy, your doctor and nurse will watch for side effects and make any needed drug changes.

Home Safety after Chemotherapy Treatments

After receiving chemotherapy, you and your caregivers need to take special care to prevent contact with your body fluids. These fluids include urine, stools, sweat, mucus, blood, vomit, and those from sex. Your doctor or nurse will suggest home safety measures that you and your caregivers should follow, such as:

- ▶ Closing the lid and flush twice after using the toilet.
- ▶ Sitting on the toilet to urinate, if you are male.
- ▶ Washing your hands with soap and water after using the restroom.
- ▶ Cleaning splashes from the toilet with bleach wipes.
- ▶ Using gloves when handling body fluids and washing your hands after removing the gloves.
- ▶ Wearing disposable pads or diapers if incontinence is an issue and wearing gloves when handling.
- ▶ Washing linens soiled with body fluids separately.
- ▶ Using condoms during sex.

The length of time that you and your caregivers need to follow these guidelines might differ depending on the policy where you receive treatment and the drugs that you receive. Your doctor or nurse will tell you how long you and your caregivers need to practice these safety measures.

How often will I receive chemotherapy?

Treatment schedules for chemotherapy vary widely. How often and how long you get chemotherapy depends on:

- ▶ Your type of cancer and how advanced it is
- ▶ The goals of treatment (whether chemotherapy is used to cure your cancer, control its growth, or ease the symptoms)
- ▶ The type of chemotherapy
- ▶ How your body reacts to chemotherapy

You may receive chemotherapy in cycles. A cycle is a period of chemotherapy treatment followed by a period of rest. For instance, you might receive one week of chemotherapy followed by three weeks of rest. These four weeks make up one cycle. The rest period gives your body a chance to build new healthy cells.

Can I miss a dose of chemotherapy?

It is not good to skip a chemotherapy treatment. But sometimes your doctor or nurse may change your chemotherapy schedule due to side effects you are having. If your schedule changes, your doctor or nurse will explain what to do and when to start treatment again.

How is chemotherapy given?

Chemotherapy may be given in many ways.

- ▶ **Injection.** The chemotherapy is given by a shot in a muscle in your arm, thigh, or hip, or right under the skin in the fatty part of your arm, leg, or belly.
- ▶ **Intra-arterial (IA).** The chemotherapy goes directly into the artery that is feeding the cancer.
- ▶ **Intraperitoneal (IP).** The chemotherapy goes directly into the peritoneal cavity (the area that contains organs such as your intestines, stomach, liver, and ovaries).
- ▶ **Intravenous (IV).** The chemotherapy goes directly into a vein.
- ▶ **Topical.** The chemotherapy comes in a cream that you rub onto your skin.
- ▶ **Oral.** The chemotherapy comes in pills, capsules, or liquids that you swallow.



Things to know about getting chemotherapy through an IV

Chemotherapy is often given through a thin needle that is placed in a vein on your hand or lower arm. Your nurse will put the needle in at the start of each treatment and remove it when treatment is over. Let your doctor or nurse know right away if you feel pain or burning while you are getting IV chemotherapy.

IV chemotherapy is often given through catheters or ports, sometimes with the help of a pump.

Catheters. A catheter is a soft, thin tube. A surgeon places one end of the catheter in a large vein, often in your chest area. The other end of the catheter stays outside your body. Most catheters stay in place until all your chemotherapy treatments are done. Catheters can also be used for drugs other than chemotherapy and to draw blood. Be sure to watch for signs of infection around your catheter. For more information on [Infection](#), see page 27.

Ports. A port is a small, round disc made of plastic or metal that is placed under your skin. A catheter connects the port to a large vein, most often in your chest. Your nurse can insert a needle into your port to give you chemotherapy or draw blood. This needle can be left in place for chemotherapy treatments that are given for more than 1 day. Be sure to watch for signs of infection around your port. For more information on [Infection](#), see page 27.

Pumps. Pumps are often attached to catheters or ports. They control how much and how fast chemotherapy goes into a catheter or port. Pumps can be internal or external. External pumps remain outside your body. Most people can carry these pumps with them. Internal pumps are placed under your skin during surgery.

How will I feel during chemotherapy?

Chemotherapy affects people in different ways. How you feel depends on how healthy you are before treatment, your type of cancer, how advanced it is, the kind of chemotherapy you are getting, and the dose. Doctors and nurses cannot know for certain how you will feel during chemotherapy.

There are many ways to manage chemotherapy side effects. For more information, see the [List of Side Effects](#) section starting on page 13.

Can I work during chemotherapy?

Many people can work during chemotherapy, as long as they match their schedule to how they feel. Whether or not you can work may depend on what kind of work you do. If your job allows, you may want to see if you can work part-time or work from home on days you do not feel well.

Many employers are required by law to change your work schedule to meet your needs during cancer treatment. Talk with your employer about ways to adjust your work during chemotherapy. You can learn more about these laws by talking with a social worker.

Can I take over-the-counter and prescription drugs while I get chemotherapy?

This depends on the type of chemotherapy you get and the other types of drugs you plan to take. Take only drugs that are approved by your doctor or nurse. Tell your doctor or nurse about all the over-the-counter and prescription drugs you take, including laxatives, allergy medicines, cold medicines, pain relievers, aspirin, and ibuprofen.



One way to let your doctor or nurse know about these drugs is by bringing in all your pill bottles. Your doctor or nurse needs to know:

- ▶ The name of each drug
- ▶ The reason you take it
- ▶ How much you take
- ▶ How often you take it



Talk to your doctor or nurse before you take any over-the-counter or prescription drugs, vitamins, minerals, dietary supplements, or herbs.

Can I take minerals, dietary supplements, or herbs while I get chemotherapy?

Some of these products can change how chemotherapy works. For this reason, it is important to tell your doctor or nurse about all the vitamins, minerals, dietary supplements, and herbs that you take before you start chemotherapy. During chemotherapy, talk with your doctor before you take any of these products.



How will I know if chemotherapy is working?

Your doctor will give you physical exams and medical tests (such as blood tests and x-rays). He or she will also ask you how you feel.

You cannot tell if chemotherapy is working based on its side effects. Some people think that severe side effects mean that chemotherapy is working well, or that no side effects mean that chemotherapy is not working. The truth is that side effects have nothing to do with how well chemotherapy is fighting your cancer.

How much does chemotherapy cost?

It is hard to say how much chemotherapy will cost. It depends on:

- ▶ The types and doses of chemotherapy used
- ▶ How long and how often chemotherapy is given
- ▶ Whether you get chemotherapy at home, in a clinic or office, or during a hospital stay
- ▶ The part of the country where you live

Does my health insurance pay for chemotherapy?

Talk with your health insurance company about what costs it will pay for. Questions to ask include:

- ▶ What will my insurance pay for?
- ▶ Do I need to call my insurance company before each treatment for it to be covered? Or, does my doctor's office need to call?
- ▶ What do I have to pay for?
- ▶ Can I see any doctor I want or do I need to choose from a list of preferred providers?
- ▶ Do I need a written referral to see a specialist?
- ▶ Is there a co-pay (money I have to pay) each time I have an appointment?
- ▶ Is there a deductible (certain amount I need to pay) before my insurance pays?
- ▶ Where should I get my prescription drugs?
- ▶ Does my insurance pay for all my tests and treatments, whether I am an inpatient or outpatient?



How can I work with my insurance plan?

- ▶ Read your insurance policy before treatment starts to find out what your plan will and will not pay for.
- ▶ Keep records of all your treatment costs and insurance claims.
- ▶ Send your insurance company all the paperwork it asks for. This may include receipts from doctors' visits, prescriptions, and lab work. Be sure to also keep copies for your own records.
- ▶ As needed, ask for help with the insurance paperwork. You can ask a friend, family member, social worker, or local group such as a senior center.
- ▶ If your insurance does not pay for something you think it should, find out why the plan refused to pay. Then talk with your doctor or nurse about what to do next. He or she may suggest ways to appeal the decision or other actions to take.

Tips for Meeting with Your Doctor or Nurse

Make a list of your questions before each appointment. Some people keep a “running list” and write down new questions as they think of them. Make sure to have space on this list to write down the answers from your doctor or nurse.

Bring a family member or trusted friend to your medical visits. This person can help you understand what the doctor or nurse says and talk with you about it after the visit is over.

Ask all your questions. There is no such thing as a stupid question. If you do not understand an answer, keep asking until you do.

Take notes. You can write them down or use a tape recorder. Later, you can review your notes and remember what was said.

Ask for printed information about your type of cancer and chemotherapy.

Let your doctor or nurse know how much information you want to know, when you want to learn it, and when you have learned enough. Some people want to learn everything they can about cancer and its treatment. Others only want a little information. The choice is yours.

Find out how to contact your doctor or nurse in an emergency. This includes who to call and where to go. Write important phone numbers in the spaces provided on the inside front cover of this book.



Questions to Ask

About My Cancer

What kind of cancer do I have? _____

What is the stage of my cancer? _____

About Treatment with Chemotherapy

Why do I need chemotherapy? _____

What is the goal of this chemotherapy? _____

What are the benefits of chemotherapy? _____

What are the risks of chemotherapy? _____

How many cycles of chemotherapy will I get? _____

How long between treatments? _____

What types of chemotherapy will I get? _____

How will these drugs be given? _____

Where do I go for this treatment? _____

How long does each treatment last? _____

Other Questions about Treatment

Are there other ways to treat my type of cancer? _____

What is the standard care for my type of cancer? _____

Are there any clinical trials for my type of cancer? _____

Should someone drive me to and from treatments? _____

About Side Effects

What side effects can I expect right away? _____

What side effects can I expect later? _____

How serious are these side effects? _____

How long will these side effects last? _____

Will all the side effects go away when treatment is over? _____

What can I do to manage or ease these side effects? _____

What can my doctor or nurse do to manage or ease side effects? _____

When should I call my doctor or nurse about these side effects? _____

Your Feelings during Chemotherapy

At some point during chemotherapy, you may feel:

- ▶ Frustrated
- ▶ Depressed
- ▶ Helpless
- ▶ Afraid
- ▶ Lonely
- ▶ Angry
- ▶ Anxious

It is normal to have a wide range of feelings while going through chemotherapy. After all, living with cancer and going through treatment can be stressful. You may also feel fatigue, which can make it harder to cope with your feelings.

How can I cope with my feelings during chemotherapy?

Relax. Find some quiet time and think of yourself in a favorite place. Breathe slowly or listen to soothing music. This may help you feel calmer and less stressed. For more on relaxation exercises, visit Learning to Relax on the National Cancer Institute's web site at: www.cancer.gov/about-cancer/coping/feelings/relaxation.

Exercise. Many people find that light exercise helps them feel better. There are many ways for you to exercise, such as walking, riding a bike, and doing yoga. Talk with your doctor or nurse about ways you can exercise.

Talk with others. Talk about your feelings with someone you trust. Choose someone who can focus on you, such as a close friend, family member, chaplain, nurse, or social worker. You may also find it helpful to talk with someone else who is going through chemotherapy.

Join a support group. Cancer support groups provide support for people with cancer. These groups allow you to meet others with the same problems. You will have a chance to talk about your feelings and listen to other people talk about theirs. You can find out how



others cope with cancer, chemotherapy, and side effects. Your doctor, nurse, or social worker may know about support groups near where you live. Some support groups also meet online (over the Internet), which can be helpful if you cannot travel.

Talk to your doctor or nurse about things that worry or upset you. You may want to ask about seeing a counselor. Your doctor may also suggest that you take medication if you find it very hard to cope with your feelings.



It's normal to have a wide range of feelings during chemotherapy. After all, living with cancer and going through treatment can be stressful.

Ways to learn more

To learn more about coping with your feelings and relationships during cancer treatment, read *Taking Time: Support for People with Cancer*, a booklet from the National Cancer Institute, available at www.cancer.gov/publications/patient-education/taking-time.

Cancer Support Community

Dedicated to providing support, education, and hope to people affected by cancer.

Call: 1-888-793-9355

Visit: www.cancersupportcommunity.org

E-mail: help@cancersupportcommunity.org

CancerCare, Inc.

Offers free support, information, financial assistance, and practical help to people with cancer and their loved ones.

Call: 1-800-813-HOPE (1-800-813-4673)

Visit: www.cancer.org

E-mail: info@cancer.org

About Side Effects

What are side effects?

Side effects are problems caused by cancer treatment. Some common side effects from chemotherapy are fatigue, nausea, vomiting, decreased blood cell counts, hair loss, mouth sores, and pain.



What causes side effects?

Chemotherapy is designed to kill fast-growing cancer cells. But it can also affect healthy cells that grow quickly. These include cells that line your mouth and intestines, cells in your bone marrow that make blood cells, and cells that make your hair grow. Chemotherapy causes side effects when it harms these healthy cells.

Will I get side effects from chemotherapy?

You may have a lot of side effects, some, or none at all. This depends on the type and amount of chemotherapy you get and how your body reacts. Before you start chemotherapy, talk with your doctor or nurse about which side effects to expect.

How long do side effects last?

How long side effects last depends on your health and the kind of chemotherapy you get. Most side effects go away after chemotherapy is over. But sometimes it can take months or even years for them to go away.

Sometimes, chemotherapy causes long-term side effects that do not go away. These may include damage to your heart, lungs, nerves, kidneys, or reproductive organs. Some types of chemotherapy may cause a second cancer years later. Ask your doctor or nurse about your chance of having long-term side effects.

What can be done about side effects?

Doctors have many ways to prevent or treat chemotherapy side effects and help you heal after each treatment session. Talk with your doctor or nurse about which ones to expect and what to do about them. Make sure to let your doctor or nurse know about any changes you notice—they may be signs of a side effect.

The chart on the next page tells you where in this book to look for more information about specific side effects.

List of Side Effects

Below is a list of side effects that chemotherapy may cause.

Not everyone gets every side effect. Which ones you have will depend on the type and dose of your chemotherapy and whether you have other health problems, such as diabetes or heart disease.

Talk with your doctor or nurse about the side effects on this list. Ask which ones may affect you. Mark the ones you may get and go to the pages listed to learn more.



You may have a lot of side effects, some, or none at all.

Anemia, see page 14

Appetite Changes, see page 16

Bleeding, see page 18

Constipation, see page 20

Diarrhea, see page 21

Eye Changes, see page 48

Fatigue, see page 23

Flu-like symptoms, see page 48

Fluid retention, see page 48

Hair Loss, see page 25

Infection, see page 27

Infertility, see page 30

Mouth and Throat Changes, see page 32

Nausea and Vomiting, see page 35

Nervous System Changes, see page 37

Pain, see page 39

Sexual Changes, see page 41

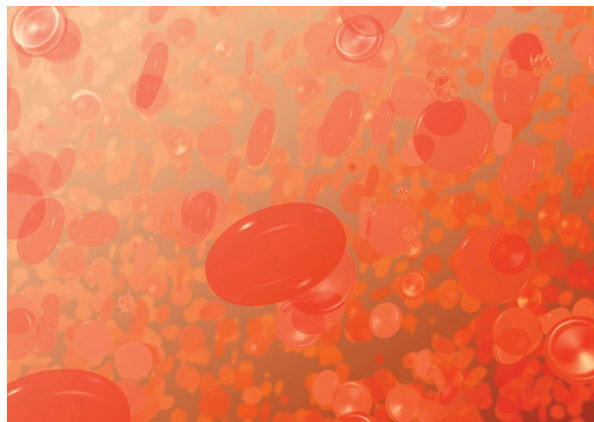
Skin and Nail Changes, see page 44

Urinary, Kidney, or Bladder Changes, see page 47

Anemia

What it is and why it occurs

Red blood cells carry oxygen throughout your body. Anemia is when you have too few red blood cells to carry the oxygen your body needs. Your heart works harder when your body does not get enough oxygen. This can make it feel like your heart is pounding or beating very fast. Anemia can also make you feel short of breath, weak, dizzy, faint, or very tired.



Some types of chemotherapy cause anemia because they make it harder for bone marrow to produce new red blood cells.

Ways to manage

Get plenty of rest. Try to sleep at least 8 hours each night. You might also want to take 1 to 2 short naps (1 hour or less) during the day.

Limit your activities. This means doing only the activities that are most important to you. For example, you might go to work but not clean the house. Or you might order take-out food instead of cooking dinner.

Accept help. When your family or friends offer to help, let them. They can help care for your children, pick up groceries, run errands, drive you to doctor's visits, or do other chores you feel too tired to do.

Eat a well-balanced diet. Choose a diet that contains all the calories and protein your body needs. Calories will help keep your weight up, and extra protein can help repair tissues that have been harmed by cancer treatment. Talk to your doctor, nurse, or dietitian about the diet that is right for you. (To learn more, see [Appetite Changes](#) on page 16.)



Stand up slowly. You may feel dizzy if you stand up too fast. When you get up from lying down, sit for a minute before you stand.



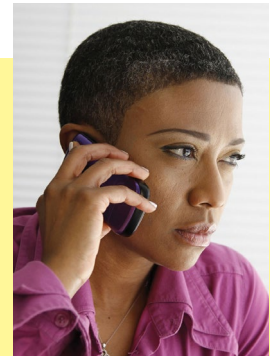
When you get up from lying down, sit for a moment before you stand.

Your doctor or nurse will check your blood cell count throughout your chemotherapy.

You may need a blood transfusion if your red blood cell count falls too low. Your doctor may also prescribe a medicine to boost (speed up) the growth of red blood cells or suggest that you take iron or other vitamins.

Call your doctor or nurse if:

- ▶ Your level of fatigue changes or you are not able to do your usual activities.
- ▶ You feel dizzy or like you are going to faint.
- ▶ You feel short of breath.
- ▶ It feels like your heart is pounding or beating very fast.



For more information on how to manage **Fatigue** that may be caused by anemia, see page 23.

Appetite Changes

What they are and why they occur

Chemotherapy can cause appetite changes. You may lose your appetite because of nausea (feeling sick to your stomach), mouth and throat problems that make it painful to eat, or drugs that cause you to lose your taste for food. Appetite changes can also come from feeling depressed or tired. This problem may last for a day, a few weeks, or even months.

It is important to eat well, even when you have no appetite. This means eating and drinking foods that have plenty of protein, vitamins, and calories. Eating well helps your body fight infection and repair tissues that are damaged by chemotherapy. Not eating well can lead to weight loss, weakness, and fatigue.

Some cancer treatments cause weight gain or an increase in your appetite. Be sure to ask your doctor, nurse, or dietitian what types of appetite changes you might expect and how to manage them.

Ways to manage

Eat five to six small meals or snacks each day instead of three big meals. Many people find it easier to eat smaller amounts more often. Choose foods and drinks that are high in calories and protein. See page 51 for a list of these foods.

Set a daily schedule for eating your meals and snacks. Eat when it is time to eat, rather than when you feel hungry. You may not feel hungry while you are on chemotherapy, but you still need to eat.

Drink milkshakes, smoothies, juice, or soup if you do not feel like eating solid foods.

Liquids like these can help provide the protein, vitamins, and calories your body needs. See page 50 for a list of Liquid Foods.



Use plastic forks and spoons. Some types of chemotherapy give you a metal taste in your mouth. Eating with plastic can help decrease the metal taste. Cooking in glass pots and pans can also help.

Increase your appetite by doing something active. For instance, you might have more of an appetite if you take a short walk before lunch. Also, be careful not to decrease your appetite by drinking too much liquid before or during meals.

Change your routine. Eat in a different place, such as the dining room rather than the kitchen. Or, eat with other people instead of eating alone. If you eat alone, you may want to listen to the radio or watch TV. You may also want to vary your diet by trying new foods and recipes.



Talk with your doctor, nurse, or dietitian. He or she may want you to take extra vitamins or nutrition supplements (such as high protein drinks). If you cannot eat for a long time and are losing weight, you may need to take drugs that increase your appetite or receive nutrition through an IV or feeding tube.



NCI's booklet "Eating Hints: Before, during, and after Cancer Treatment" provides more tips for making eating easier. Available at: www.cancer.gov/publications/patient-education/eating-hints

Bleeding

What it is and why it occurs

Platelets are cells that make your blood clot when you bleed. Chemotherapy can lower the number of platelets because it affects your bone marrow's ability to make them. A low platelet count is called thrombocytopenia. This condition may cause bruises even when you have not been hit or have not bumped into anything, bleeding from your nose or in your mouth, or a rash of tiny, red dots.

Ways to manage

Do:

- ▶ Brush your teeth with a very soft toothbrush.
- ▶ Soften the bristles of your toothbrush by running hot water over them before you brush.
- ▶ Use a water flosser to clean your gums and between your teeth.
- ▶ Blow your nose gently.
- ▶ Be careful when using scissors, knives, or other sharp objects.
- ▶ Use an electric shaver instead of a razor.
- ▶ Apply gentle but firm pressure to any cuts you get until the bleeding stops.
- ▶ Wear shoes all the time, even inside the house or hospital.

Do not:

- ▶ Use dental floss or toothpicks.
- ▶ Play sports or do other activities during which you could get hurt.
- ▶ Use tampons, enemas, suppositories, or rectal thermometers.
- ▶ Wear clothes with tight collars, wrists, or waistbands.



Check with your doctor or nurse before:

- ▶ Drinking beer, wine, or other types of alcohol.
- ▶ Having sex.
- ▶ Taking vitamins, herbs, minerals, dietary supplements, aspirin, or other over-the-counter medicines. Some of these products can change how chemotherapy works.



Check with your doctor or nurse before taking any vitamins, herbs, minerals, dietary supplements, aspirin, or other over-the-counter medicines.

Let your doctor know if you are constipated.

He or she may prescribe a stool softener to prevent straining and rectal bleeding when you go to the bathroom. For more information on [Constipation](#), see page 20.

Your doctor or nurse will check your platelet count often.

You may need medication, a platelet transfusion, or a delay in your chemotherapy treatment if your platelet count is too low.

Call your doctor or nurse if you have any of these symptoms:

- ▶ Bruises, especially if you did not bump into anything
- ▶ Small, red spots on your skin
- ▶ Red- or pink-colored urine
- ▶ Black or bloody bowel movements
- ▶ Bleeding from your gums or nose
- ▶ Heavy bleeding during your menstrual period or for a prolonged period
- ▶ Vaginal bleeding not caused by your period
- ▶ Headaches or changes in your vision
- ▶ A warm or hot feeling in your arm or leg
- ▶ Feeling very sleepy or confused



Constipation

What it is and why it occurs

Constipation is when bowel movements become less frequent and stools are hard, dry, and difficult to pass. You may have painful bowel movements and feel bloated or nauseous. You may belch, pass a lot of gas, and have stomach cramps or pressure in the rectum.

Drugs such as chemotherapy and pain medicine can cause constipation. It can also happen when people are not active and spend a lot of time sitting or lying down. Constipation can also be due to eating foods that are low in fiber or not drinking enough fluids.

Ways to manage

Keep a record of your bowel movements. Show this record to your doctor or nurse and talk about what is normal for you. This makes it easier to figure out whether you have constipation.

Drink at least eight cups of water or other fluids each day. Many people find that drinking warm or hot fluids, such as coffee and tea, helps with constipation. Fruit juices, such as prune juice, may also be helpful.

Be active every day. You can be active by walking, riding a bike, or doing yoga. If you cannot walk, ask about exercises that you can do in a chair or bed. Talk with your doctor or nurse about ways you can be more active.



Check with your doctor or nurse before using fiber supplements, laxatives, stool softeners, or enemas.

Ask your doctor, nurse, or dietitian about foods that are high in fiber. Eating high-fiber foods and drinking lots of fluids can help soften your stools. Good sources of fiber include whole-grain breads and cereals, dried beans and peas, raw vegetables, fresh and dried fruit, nuts, seeds, and popcorn. (To learn more, see the list of [High-Fiber Foods](#) on page 52.)

Let your doctor or nurse know if you have not had a bowel movement in two days. Your doctor may suggest a fiber supplement, laxative, stool softener, or enema. Do not use these treatments without first checking with your doctor or nurse.

Diarrhea

What it is and why it occurs

Diarrhea is frequent bowel movements that may be soft, loose, or watery. Chemotherapy can cause diarrhea because it harms healthy cells that line your large and small intestines. It may also speed up your bowels. Diarrhea can also be caused by infections or drugs used to treat constipation.

Ways to manage

Eat five or six small meals and snacks each day instead of three large meals.

Many people find it easier to eat smaller amounts more often.

Ask your doctor or nurse about foods that are high in salts such as sodium and potassium. Your body can lose these salts when you have diarrhea, and it is important to replace them. Foods that are high in sodium or potassium include bananas, oranges, peach and apricot nectar, and boiled or mashed potatoes.

Drink eight to twelve cups of clear liquids each day.

Examples include water, clear broth, ginger ale, or sports drinks such as Gatorade® or Propel®. Drink slowly, and choose drinks that are at room temperature. Let carbonated drinks lose their fizz before you drink them. Add extra water if drinks make you thirsty or sick to your stomach.



Eat low-fiber foods. Foods that are high in fiber can make diarrhea worse. Low-fiber foods include bananas, white rice, white toast, and plain or vanilla yogurt. See page 53 for other Low-Fiber Foods.

Let your doctor or nurse know if your diarrhea lasts for more than 24 hours or if you have pain and cramping along with diarrhea. Your doctor may prescribe a medicine to control the diarrhea. You may also need IV fluids to replace the water and nutrients you lost. Do not take any medicine for diarrhea without first asking your doctor or nurse.

Be gentle when you wipe yourself after a bowel movement. Instead of toilet paper, use a baby wipe or squirt of water from a spray bottle to clean yourself after bowel movements. Let your doctor or nurse know if your rectal area is sore or bleeds or if you have hemorrhoids.

Ways to Manage Side Effects

Ask your doctor if you should try a clear liquid diet. This can give your bowels time to rest. Most people stay on this type of diet for five days or less. See page 49 for a list of Clear Liquids.



Ask your doctor or nurse before taking medicine for diarrhea.

Avoid:

- ▶ Drinks that are very hot or very cold
- ▶ Beer, wine, and other types of alcohol
- ▶ Milk or milk products, such as ice cream, milkshakes, sour cream, and cheese
- ▶ Spicy foods, such as hot sauce, salsa, chili, and curry dishes
- ▶ Greasy and fried foods, such as French fries and hamburgers
- ▶ Foods or drinks with caffeine, such as regular coffee, black tea, cola, and chocolate
- ▶ Foods or drinks that cause gas, such as cooked dried beans, cabbage, broccoli, and soy milk and other soy products
- ▶ Foods that are high in fiber, such as cooked dried beans, raw fruits and vegetables, nuts, and whole-wheat breads and cereals

To learn more about ways to manage diarrhea during cancer treatment, read *Eating Hints: Before, during, and after Cancer Treatment*, a booklet from NCI, available at: www.cancer.gov/publications/patient-education/eating-hints.

Fatigue

What it is and why it occurs

Fatigue from chemotherapy can range from a mild to extreme feeling of being tired. Many people describe fatigue as feeling weak, weary, worn out, heavy, or slow. Resting does not always help.

Many people say they feel fatigue during chemotherapy and even for weeks or months after treatment is over. Fatigue can be caused by the type of chemotherapy, the effort of making frequent visits to the doctor, or feelings such as stress, anxiety, and depression. If you receive radiation therapy along with chemotherapy, your fatigue may be more severe.

Fatigue can also be caused by:

- ▶ Anemia (see page 14)
- ▶ Pain (see page 39)
- ▶ Medications
- ▶ Appetite Changes (see page 16)
- ▶ Trouble sleeping
- ▶ Lack of activity
- ▶ Trouble breathing
- ▶ Infection (see page 27)
- ▶ Doing too much at one time
- ▶ Other medical problems

Fatigue can happen all at once or little by little. People feel fatigue in different ways. You may feel more or less fatigue than someone else who gets the same type of chemotherapy.

Ways to manage

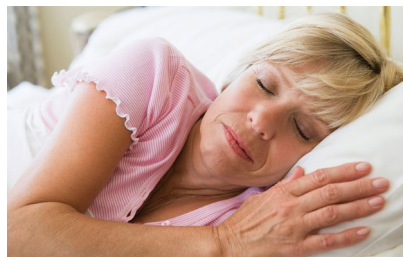
Relax. You might want to try meditation, prayer, yoga, guided imagery, visualization, or other ways to relax and decrease stress. For ideas on relaxation exercises, see Learning to Relax at www.cancer.gov/about-cancer/coping/feelings/relaxation.

Eat and drink well. Often, this means five to six small meals and snacks a day rather than three large meals. Keep foods around that are easy to fix, such as canned soups, frozen meals, yogurt, and cottage cheese. Drink plenty of fluids each day—about 8 cups of water or juice.



Ways to Manage Side Effects

Plan time to rest. You may feel better when you rest or take a short nap during the day. Many people say that it helps to rest for just 10 to 15 minutes rather than nap for a long time. If you nap, try to sleep for less than 1 hour. Keeping naps short will help you sleep better at night.



Be active. Research shows that exercise can ease fatigue and help you sleep better at night. Try going for a 15-minute walk, doing yoga, or riding an exercise bike. Plan to be active when you have the most energy. Talk with your doctor or nurse about ways you can be active while getting chemotherapy.

Try not to do too much. With fatigue, you may not have enough energy to do all the things you want to do. Choose the activities you want to do and let someone else help with the others. Try quiet activities, such as reading, knitting, or learning a new language on tape.

Sleep at least eight hours each night. This may be more sleep than you needed before chemotherapy. You are likely to sleep better at night when you are active during the day. You may also find it helpful to relax before going to bed. For instance, you might read a book, work on a jigsaw puzzle, listen to music, or do other quiet hobbies. For relaxation exercises, visit Learning to Relax on the National Cancer Institute's web site at: www.cancer.gov/about-cancer/coping/feelings/relaxation.

Plan a work schedule that works for you. Fatigue may affect the amount of energy you have for your job. You may feel well enough to work your full schedule. Or you may need to work less—maybe just a few hours a day or a few days each week. If your job allows, you may want to talk with your boss about ways to work from home. Or you may want to go on medical leave (stop working for a while) while getting chemotherapy.

Let others help. Ask family members and friends to help when you feel fatigued. Perhaps they can help with household chores or drive you to and from doctor's visits. They might also help by shopping for food and cooking meals for you to eat now or freeze for later.

Learn from others who have cancer. People who have cancer can help by sharing ways that they manage fatigue. One way to meet others is by joining a support group—either in person or online. Talk with your doctor or nurse to learn more.

Keep a diary of how you feel each day. This will help you plan how to best use your time. Share your diary with your nurse. Let your doctor or nurse know if you notice changes in your energy level, whether you have lots of energy or are very tired.

Talk with your doctor or nurse. Your doctor may prescribe medication that can help decrease fatigue, give you a sense of well-being, and increase your appetite. He or she may also suggest treatment if your fatigue is from anemia. (To learn more about [Anemia](#), see page 14.)

Hair Loss

What it is and why it occurs



Hair often grows back two to three months after chemotherapy is over.

Hair loss (also called alopecia) is when some or all of your hair falls out. This can happen anywhere on your body: your head, face, arms, legs, underarms, or the pubic area between your legs. Many people are upset by the loss of their hair and find it the most difficult part of chemotherapy.

Some types of chemotherapy damage the cells that cause hair growth. Hair loss often starts two to three weeks after chemotherapy begins. Your scalp may hurt at first. Then you may lose your hair, either a little at a time or in clumps. It takes about one week for all your hair to fall out. Almost always, your hair will grow back two to three months after chemotherapy is over. You may notice that your hair starts growing back even while you are getting chemotherapy.

Your hair will be very fine when it starts growing back. Also, your new hair may not look or feel the same as it did before. For instance, your hair may be thin instead of thick, curly instead of straight, and darker or lighter in color.

Ways to manage

Before hair loss:

Talk with your doctor or nurse. He or she will know if you are likely to have hair loss.



Cut your hair short or shave your head. You might feel more in control of hair loss if you first cut your hair or shave your head. This often makes hair loss easier to manage. If you shave your head, use an electric shaver instead of a razor.

Choose your wig before you start chemotherapy. This way, you can match the wig to the color and style of your hair. You might also take it to your hair dresser who can style the wig to look like your own hair. Make sure to choose a wig that feels comfortable and does not hurt your scalp.

Ask if your insurance company will pay for a wig. If it will not, you can deduct the cost of your wig as a medical expense on your income tax. Some groups also have free “wig banks.” Your doctor, nurse, or social worker will know if there is a wig bank near you.

Be gentle when you wash your hair. Use a mild shampoo, such as a baby shampoo. Dry your hair by patting (not rubbing) it with a soft towel.

Ways to Manage Side Effects

Do not use items that can hurt your scalp. These include:

- ▶ Straightening or curling irons
- ▶ Hairsprays
- ▶ Brush rollers or curlers
- ▶ Hair dyes
- ▶ Electric hair dryers
- ▶ Products to perm or relax your hair
- ▶ Hair bands and clips



If you plan to buy a wig, do so while you still have hair.

After hair loss:

Protect your scalp. Your scalp may hurt during and after hair loss. Protect it by wearing a hat, turban, or scarf when you are outside. Try to avoid places that are very hot or very cold. This includes tanning beds and outside in the sun or cold air. And always apply sunscreen or sunblock to protect your scalp.

Stay warm. You may feel colder once you lose your hair. Wear a hat, turban, scarf, or wig to help you stay warm.

Sleep on a satin pillow case. Satin creates less friction than cotton when you sleep on it. Therefore, you may find satin pillow cases more comfortable.

Talk about your feelings. Many people feel angry, depressed, or embarrassed about hair loss. If you are very worried or upset, you might want to talk about these feelings with a doctor, nurse, family member, close friend, or someone who has had hair loss caused by cancer treatment.

Ways to learn more

American Cancer Society

Offers a variety of services to people with cancer and their families, including referrals to low-cost wig banks.

Call: 1-800-ACS-2345 (1-800-227-2345)

TTY: 1-866-228-4327

Visit: www.cancer.org



Infection

What it is and why it occurs

Some types of chemotherapy make it harder for your bone marrow to produce new white blood cells. White blood cells help your body fight infection. Since chemotherapy decreases the number of your white blood cells, it is important to avoid infections.

There are many types of white blood cells. One type is called a neutrophil. When your neutrophil count is low, it is called neutropenia. Your doctor or nurse may do blood tests to find out whether you have neutropenia.

It is important to watch for signs of infection when you have neutropenia. Check for fever at least once a day, or as often as your doctor or nurse tells you to. You may find it best to use a digital thermometer. Many doctors will want you to call if you have a fever of 100.5°F or higher, but this can vary. Ask your doctor or nurse when you should call to report a high fever.

Ways to manage

Your doctor or nurse will check your white blood cell count throughout your treatment. If chemotherapy is likely to make your white blood cell count very low, you may get medicine to raise your white blood cell count and lower your risk of infection.

Wash your hands often with soap and water. Be sure to wash your hands before cooking and eating, and after you use the bathroom, blow your nose, cough, sneeze, or touch animals. Carry hand sanitizer for times when you are not near soap and water.

Use sanitizing wipes to clean surfaces and items that you touch. This includes public telephones, ATM machines, doorknobs, and other common items.



Be gentle and thorough when you wipe yourself after a bowel movement. Instead of toilet paper, use a baby wipe or squirt of water from a spray bottle to clean yourself. Let your doctor or nurse know if your rectal area is sore or bleeds or if you have hemorrhoids.

Stay away from people who are sick. This includes people with colds, flu, measles, or chicken pox. You also need to stay away from children who just had a “live virus” vaccine for chicken pox or polio. Call your doctor, nurse, or local health department if you have any questions.

Ways to Manage Side Effects

Stay away from crowds. Try not to be around a lot of people. For instance, plan to go shopping or to the movies when the stores and theaters are less crowded.

Be careful not to cut or nick yourself. Do not cut or tear your nail cuticles. Use an electric shaver instead of a razor. And be extra careful when using scissors, needles, or knives.

Watch for signs of infection around your catheter. Signs to look for include drainage, redness, swelling, or soreness. Tell your doctor or nurse about any changes you notice near your catheter.

Maintain good mouth care. Brush your teeth after meals and before you go to bed. Use a very soft toothbrush. You can make the bristles even softer by running hot water over them just before you brush. Use a mouth rinse that does not contain alcohol. Check with your doctor or nurse before going to the dentist. (For more about taking care of your mouthMouth and Throat Changes, see page 32.)

Take good care of your skin. Do not squeeze or scratch pimples. Use lotion to soften and heal dry, cracked skin. Dry yourself after a bath or shower by gently patting your skin. Be careful not to rub your skin. For more information about taking care of your skinSkin and Nail Changes, see page 44.

Clean cuts right away. Use warm water, soap, and an antiseptic to clean your cuts. Clean your cut like this every day until your cut has a scab over it.

Be careful around animals. Do not clean your cat's litter box, pick up dog waste, or clean bird cages or fish tanks. Be sure to wash your hands after touching pets and other animals.

Do not get a flu shot or other type of vaccine without first asking your doctor or nurse. Some vaccines contain a live virus, which you should not be exposed to.

Keep hot foods hot and cold foods cold. Do not leave leftovers sitting out. Put them in the refrigerator as soon as you are done eating.

Wash raw vegetables and fruits well before eating them. Avoid those that cannot be washed well, such as raspberries.



Do not eat raw or undercooked fish, seafood, meat, chicken, or eggs.

These foods may have bacteria that can cause infection.

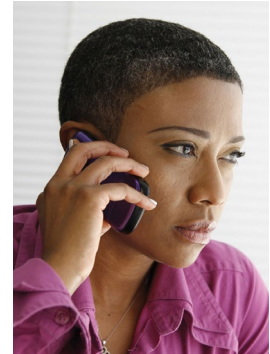
Do not eat or drink items that are past the freshness date. Do not eat foods that have moldy spots, even if you cut them out.



Do not take drugs that reduce fever without first talking with your doctor or nurse.

Call your doctor right away if you think you have an infection.

Even if it's on the weekend or in the middle of the night, you still need to call. Be sure you know how to reach your doctor after office hours and on weekends. Call when you have chills or sweats or if you have a fever of 100.5°F or higher (or whatever temperature your doctor or nurse tells you). Do not take aspirin, acetaminophen (such as Tylenol®), ibuprofen products, or any other drugs that reduce fever without first talking with your doctor or nurse. Besides fever, other signs of infection include:



- ▶ Redness
- ▶ Swelling
- ▶ Rash
- ▶ Chills
- ▶ Cough
- ▶ Earache
- ▶ Headache
- ▶ Stiff neck
- ▶ Bloody or cloudy urine
- ▶ Painful or frequent need to urinate
- ▶ Sinus pain or pressure



Be sure you know how to reach your doctor or nurse after office hours and on weekends.

Infertility

What it is and why it occurs

Some types of chemotherapy can cause infertility. For a woman, this means that you may not be able to become pregnant. For a man, this means you may not be able to father a child.



In women, chemotherapy may damage the ovaries. This damage can lower the number of healthy eggs in the ovaries. It can also lower the hormones produced by them. The drop in hormones can lead to early menopause. Early menopause and fewer healthy eggs can cause infertility.

In men, chemotherapy may damage sperm cells, which grow and divide quickly. Infertility may occur because chemotherapy can lower the number of sperm, make sperm less able to move, or cause other types of damage.

Whether or not you become infertile depends on the type of chemotherapy you get, your age, and whether you have other health problems. Infertility can last the rest of your life.



Before treatment starts, tell your doctor or nurse if you want to have children in the future.

Ways to manage

For WOMEN, talk with your doctor or nurse about:

Whether you want to have children. Before you start chemotherapy, let your doctor or nurse know if you might want to get pregnant in the future. He or she may talk with you about ways to preserve your eggs to use after treatment ends or refer you to a fertility specialist.

Birth control. It is very important that you do not get pregnant while getting chemotherapy. These drugs can hurt the fetus, especially in the first three months of pregnancy. If you have not yet gone through menopause, talk with your doctor or nurse about birth control and ways to prevent pregnancy.

Pregnancy. If you still have menstrual periods, your doctor or nurse may ask you to have a pregnancy test before you start chemotherapy. If you are pregnant, your doctor or nurse will talk with you about other treatment options.



Chemotherapy can cause birth defects. Do not get pregnant while you are on treatment.



Talk with your doctor or nurse about saving your sperm before you start treatment, if you want to father children in the future.

For MEN, talk with your doctor or nurse about:

Whether you want to have children. Before you start chemotherapy, let your doctor or nurse know if you might want to father children in the future. He or she may talk with you about ways to preserve your sperm to use in the future or refer you to a fertility specialist.

Birth control. It is very important that your spouse or partner not get pregnant during your course of chemotherapy. Chemotherapy can damage your sperm and cause birth defects.



*Chemotherapy may damage sperm and cause birth defects.
Use protection to make sure that your spouse or partner not get pregnant while you are in treatment.*

Ways to learn more

American Cancer Society

Offers a variety of services to people with cancer and their families.

Call: 1-800-ACS-2345 (1-800-227-2345)

Visit: www.cancer.org

fertileHOPE

A LIVESTRONG initiative dedicated to providing reproductive information, support, and hope to cancer patients and survivors whose medical treatments present the risk of infertility.

Call: 1-855-844-7777

Visit: www.fertilehope.org

Mouth and Throat Changes

What they are and why they occur

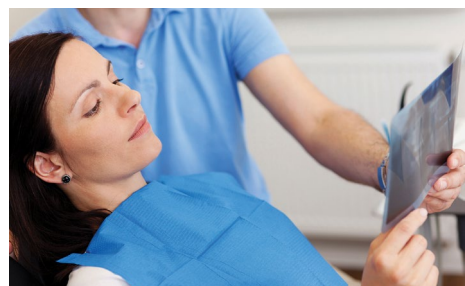
Some types of chemotherapy harm fast-growing cells, such as those that line your mouth, throat, and lips. This can affect your teeth, gums, the lining of your mouth, and the glands that make saliva. Most mouth problems go away a few days after chemotherapy is over.

Mouth and throat problems may include:

- ▶ Dry mouth
- ▶ Changes in taste and smell, such as when food tastes like metal or chalk, has no taste, or does not taste or smell like it used to
- ▶ Infections of your gums, teeth, or tongue
- ▶ Increased sensitivity to hot or cold foods
- ▶ Mouth sores
- ▶ Trouble eating when your mouth gets very sore

Ways to manage

Visit a dentist at least two weeks before starting chemotherapy. It is important that your mouth is as healthy as possible, which means having all your dental work done before chemotherapy starts. If you cannot go to the dentist before chemotherapy starts, ask your doctor or nurse when it is safe to go. Be sure to tell your dentist that you have cancer and about your treatment plan.



Check your mouth and tongue every day. By checking your mouth, you can see or feel problems (such as mouth sores, white spots, or infections) as soon as they start. Inform your doctor or nurse right away if you see any of these problems.

Keep your mouth moist. You can keep your mouth moist by sipping water throughout the day, sucking on ice chips or sugar-free hard candy, or chewing sugar-free gum. Ask your doctor or nurse about saliva substitutes if your mouth is always dry.

Clean your mouth, teeth, gums, and tongue.

- ▶ Brush your teeth, gums, and tongue after each meal and at bedtime.
- ▶ Use an extra-soft toothbrush. You can make the bristles even softer by rinsing your toothbrush in hot water before you brush.
- ▶ If brushing is painful, try cleaning your teeth with cotton swabs or Toothettes®, which are shaped sponges on a stick.
- ▶ Use a fluoride toothpaste or special fluoride gel that your dentist prescribes.
- ▶ Do not use mouthwash that has alcohol. Instead, rinse your mouth three to four times a day with a solution of baking soda, salt, and warm water followed by a plain water rinse. There are many recipes for this solution, but an example is 1/4 teaspoon baking soda, 1/8 teaspoon salt, and 1 cup of warm water.
- ▶ Gently floss your teeth every day. If your gums bleed or hurt, avoid those areas but floss your other teeth. Ask your doctor or nurse about flossing if your platelet count is low. (See [Bleeding](#) on page 18 for more information on platelets.)
- ▶ If you wear dentures, make sure they fit well and keep them clean. Also, limit the length of time that you wear them.



Be careful what you eat when your mouth is sore.

- ▶ Choose foods that are moist, soft, and easy to chew or swallow. These include cooked cereals, mashed potatoes, and scrambled eggs.
- ▶ Use a blender to puree cooked foods so that they are easier to eat. To help avoid infection, be sure to wash all blender parts before and after using them. If possible, it is best to wash them in a dishwasher.
- ▶ Take small bites of food, chew slowly, and sip liquids while you eat.
- ▶ Soften food with gravy, sauces, broth, yogurt, or other liquids.
- ▶ Eat foods that are cool or at room temperature. You may find that warm and hot foods hurt your mouth or throat.
- ▶ Suck on ice chips or popsicles. These can relieve mouth pain.
- ▶ Ask your dietitian for ideas of foods that are easy to eat. For ideas of soft [Foods that Are Easy on a Sore Mouth](#), see page 54.

Ways to Manage Side Effects



Call your doctor, nurse, or dentist if your mouth hurts a lot. Your doctor or dentist may prescribe medicine for pain or to keep your mouth moist. Make sure to give your dentist the phone number of your doctor and nurse.

Avoid things that can hurt, scrape, or burn your mouth, such as:

- ▶ Sharp or crunchy foods, such as crackers and potato or corn chips
- ▶ Spicy foods, such as hot sauce, curry dishes, salsa, and chili
- ▶ Citrus fruits or juices such as orange, lemon, and grapefruit
- ▶ Food and drinks that have a lot of sugar, such as candy or soda
- ▶ Beer, wine, and other types of alcohol
- ▶ Toothpicks or other sharp objects
- ▶ Tobacco products, including cigarettes, pipes, cigars, and chewing tobacco



Do not use tobacco or drink alcohol if your mouth is sore.

Ways to learn more

National Oral Health Information Clearinghouse

A service of the National Institute of Dental and Craniofacial Research that provides oral health information for special care patients.

Call: 1-866-232-4528

Visit: www.nidcr.nih.gov

E-mail: nidcrinfo@mail.nih.gov

Smokefree.gov

Provides resources including information on quitlines, a step-by-step cessation guide, and publications to help you or someone you care about quit smoking.

Call: 1-877-44U-QUIT (1-877-448-7848)

Visit: www.smokefree.gov

Nausea and Vomiting

What they are and why they occur

Some types of chemotherapy can cause nausea, vomiting, or both. Nausea is when you feel sick to your stomach, like you are going to throw up. Vomiting is when you throw up. You may also have dry heaves, which is when your body tries to vomit even though your stomach is empty.

Nausea and vomiting can occur while you are getting chemotherapy, right after, or many hours or days later. You will most likely feel better on the days you do not get chemotherapy.

New drugs can help prevent nausea and vomiting. These are called antiemetic or antinausea drugs. You may need to take these drugs 1 hour before each chemotherapy treatment and for a few days after. How long you take them after chemotherapy will depend on the type of chemotherapy you are getting and how you react to it. If one antinausea drug does not work well for you, your doctor can prescribe a different one. You may need to take more than one type of drug to help with nausea. Acupuncture may also help. Talk with your doctor or nurse about treatments to control nausea and vomiting caused by chemotherapy.

Ways to manage

Prevent nausea. One way to prevent vomiting is to prevent nausea. Try having bland, easy-to-digest foods and drinks that do not upset your stomach. These include plain crackers, toast, and gelatin. To learn more, see the list of [Foods that Are Easy on the Stomach](#) on page 55.

Plan when it's best for you to eat and drink. Some people feel better when they eat a light meal or snack before chemotherapy. Others feel better when they have chemotherapy on an empty stomach (nothing to eat or drink for 2 to 3 hours before treatment). After treatment, wait at least 1 hour before you eat or drink.

Eat small meals and snacks. Instead of three large meals each day, many people find it easier to eat if they have five or six small meals and snacks. It also helps not to drink a lot before or during meals and avoid lying down right after you eat.

Eat and drink items that are not too hot nor too cold. Give hot foods and drinks time to cool down, or make them colder by adding ice. You can warm up cold foods by taking them out of the refrigerator 1 hour before you eat or warming them slightly in a microwave. Drink cola or ginger ale that is warm and has lost its fizz.



Ways to Manage Side Effects



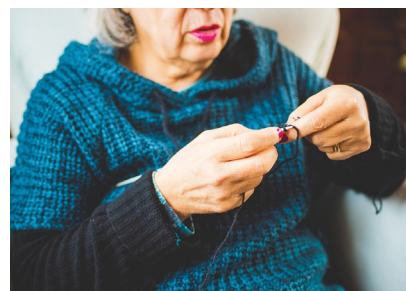
Eat five or six small meals and snacks each day instead of three large ones.

Avoid strong smells. Try to avoid foods and drinks with strong smells, such as coffee, fish, onions, garlic, and foods that are cooking.

Suck on small bites of popsicles or fruit ices. You may also find sucking on ice chips helpful.

Suck on sugar-free mints or tart candies. But do not use tart candies if you have mouth or throat sores.

Relax before treatment. You may feel less nausea if you relax before each chemotherapy treatment. Meditate, do deep breathing exercises, or imagine scenes or experiences that make you feel peaceful. You can also do quiet hobbies such as reading, listening to music, or knitting. For relaxation exercises, visit Learning to Relax on the National Cancer Institute's web site at: www.cancer.gov/about-cancer/coping/feelings/relaxation.



When you feel like vomiting, breathe deeply and slowly or get fresh air. You might also distract yourself by chatting with friends or family, listening to music, or watching a movie or TV shows.

Talk with your doctor or nurse. Your doctor can give you drugs to help prevent nausea during and after chemotherapy. Be sure to take these drugs as ordered and let your doctor or nurse know if they do not work. You might also ask your doctor or nurse about acupuncture, which can help relieve nausea and vomiting caused by cancer treatment.

Tell your doctor or nurse if you vomit for more than one day or right after you drink.



Let your doctor or nurse know if your medicine for nausea is not working.

To learn more about dealing with nausea and vomiting during cancer treatment see *Eating Hints: Before, during, and after Cancer Treatment*, a booklet from NCI. Available at: www.cancer.gov/publications/patient-education/eating-hints.

Nervous System Changes

What they are and why they occur

Chemotherapy can cause damage to your nervous system. Many nervous system problems get better within a year of when you finish chemotherapy, but some may last the rest of your life. Symptoms may include:

- ▶ Tingling, burning, weakness, or numbness in your hands or feet
- ▶ Feeling colder than normal
- ▶ Pain when walking
- ▶ Weak, sore, tired, or achy muscles
- ▶ Being clumsy and losing your balance
- ▶ Trouble picking up objects or buttoning your clothes
- ▶ Shaking or trembling
- ▶ Hearing loss
- ▶ Stomach pain, such as constipation or heartburn
- ▶ Fatigue
- ▶ Confusion and memory problems
- ▶ Dizziness
- ▶ Depression



Ways to Manage Side Effects



Let your doctor or nurse know right away if you notice any nervous system changes. It is important to treat these problems as soon as possible.

Ways to manage

Be careful when handling knives, scissors, and other sharp or dangerous objects.

Think about wearing gloves while gardening or cooking for extra protection.

Avoid falling. Walk slowly, hold onto handrails when using the stairs, and put no-slip bath mats in your bathtub or shower. Make sure there are no area rugs or cords to trip over. Always wear sneakers, tennis shoes, or other lace-up footwear with rubber soles. Steady yourself when you walk by using a cane or other device.

Be careful when using hot water. Use a thermometer to check the temperature in your bath or ask someone to check it for you. Wear gloves when washing dishes. Think about lowering the temperature on your hot water heater.

Rest when you need to. Ask for help taking care of household tasks and errands.

Talk to your doctor or nurse. Let them know right away if you notice any nervous system changes, including memory problems and feeling confused or depressed. Ask for pain medicine if you need it.

Pain

What it is and why it occurs

Some types of chemotherapy cause painful side effects, such as burning, numbness, and tingling or shooting pains in your hands and feet. They can also cause mouth sores, headaches, muscle pains, and stomach pains.



Pain can be caused by the cancer itself or by chemotherapy. Doctors and nurses have ways to decrease or relieve your pain.



Be sure to tell your doctor or nurse if you have pain.

Ways to manage

Talk about your pain with a doctor, nurse, or pharmacist. Be specific and describe:

- ▶ Where you feel pain. Is it in one part of your body or all over?
- ▶ What the pain feels like. Is it sharp, dull, or throbbing? Does it come and go, or is it steady?
- ▶ How strong the pain is. Describe it on a scale of 0 to 10.
- ▶ How long the pain lasts. Does it last for a few minutes, an hour, or longer?
- ▶ What makes the pain better or worse. For instance, does an ice pack help? Or does the pain get worse if you move a certain way?
- ▶ Which medicines you take for pain. Do they help? How long do they last? How much do you take? How often?

Let your family and friends know about your pain. They need to know about your pain so they can help you. If you are very tired or in a lot of pain, they can call your doctor or nurse for you. Knowing about your pain can also help them understand why you may be acting differently.

Ways to Manage Side Effects

Practice pain control.

- ▶ Take your pain medicine as prescribed by your doctor. If you have pain all the time, your doctor may suggest that you take your pain medicine on a set schedule. If you are on a set schedule, take the pain medicine as prescribed, rather than waiting to feel like you need it. Pain is harder to control and manage if you wait until you are in a lot of pain before taking medicine.
- ▶ Try deep breathing, yoga, or other ways to relax. This can help reduce muscle tension, anxiety, and pain. For relaxation exercises, visit Learning to Relax on the National Cancer Institute's web site at: www.cancer.gov/about-cancer/coping/feelings/relaxation.

Ask to meet with a pain or palliative care specialist. This person may be an oncologist, anesthesiologist, neurologist, neurosurgeon, nurse, or pharmacist who will talk with you about ways to control your pain.

Tell your doctor, nurse, or pain specialist if your pain changes. Your pain can change over the course of your treatment. When this happens, your pain medications may need to be changed.



NCI's book, *Pain Control: Support for People with Cancer*, provides more tips about how to control pain from cancer and its treatment. Available at: www.cancer.gov/publications/patient-education/pain-control.

Sexual Changes

What they are and why they occur

Some types of chemotherapy can cause sexual changes. These changes are different for women and men.

In women, chemotherapy may damage the ovaries, which can cause changes in hormone levels. Hormone changes can lead to problems like vaginal dryness and early menopause.

In men, chemotherapy can cause changes in hormone levels, decreased blood supply to the penis, or damage to the nerves that control the penis, all of which can lead to impotence.

Whether or not you have sexual changes during chemotherapy depends on if you have had these problems before, the type of chemotherapy you are getting, your age, and whether you have any other illnesses. Some problems, such as loss of interest in sex, are likely to improve once chemotherapy is over.



Problems for WOMEN include:

- ▶ Symptoms of menopause (for women not yet in menopause). These symptoms include:
 - Hot flashes
 - Feeling irritable
 - Vaginal dryness
 - Irregular or no menstrual periods
- ▶ Bladder or vaginal infections
- ▶ Vaginal discharge or itching
- ▶ Being too tired to have sex or not being interested in having sex
- ▶ Feeling too worried, stressed, or depressed to have sex

Problems for MEN include:

- ▶ Not being able to reach climax
- ▶ Impotence (not being able to get or keep an erection)
- ▶ Being too tired to have sex or not being interested in having sex
- ▶ Feeling too worried, stressed, or depressed to have sex

Ways to Manage Side Effects

Ways to manage

For WOMEN:

Talk with your doctor or nurse about:

- ▶ **Sex.** Ask your doctor or nurse if it is okay for you to have sex during chemotherapy. Most women can have sex, but it is a good idea to ask.
- ▶ **Birth control.** It is very important to prevent pregnancy while having chemotherapy and for a year afterwards. Chemotherapy may hurt the fetus, especially in the first three months of pregnancy. If you have not yet gone through menopause, talk with your doctor or nurse about birth control and ways to keep from getting pregnant. They may suggest that you use two forms of birth control.
- ▶ **Medications.** Talk with your doctor, nurse, or pharmacist about medications that help with sexual problems. Medications may include products to relieve vaginal dryness or a vaginal cream or suppository to reduce the chance of infection.



Talk with your doctor or nurse about ways to relieve vaginal dryness and prevent infection.

To help prevent infections:

- ▶ Wear cotton underwear or underpants and pantyhose with cotton linings.
- ▶ Do not wear tight pants or shorts.

Use a water-based vaginal lubricant (such as K-Y Jelly® or Astroglide®) when you have sex. If sex is still painful because of dryness, ask your doctor or nurse about medications to help restore moisture in your vagina.

Cope with hot flashes by:

- ▶ **Dressing in layers.** Wear a sweater or jacket that you can take off when needed.
- ▶ **Being active.** Add walking, biking, swimming, or other types of exercise to your daily routine.
- ▶ **Reducing stress.** Besides getting regular exercise, try yoga, meditation, or relaxation exercises. For relaxation exercises, visit Learning to Relax on the National Cancer Institute's web site at: www.cancer.gov/about-cancer/coping/feelings/relaxation.



For MEN:

Talk with your doctor or nurse about:

- ▶ **Sex.** Ask your doctor or nurse if it is okay for you to have sex during chemotherapy. Most men can have sex, but it is a good idea to ask. Also, ask if you should use a condom when you have sex, since traces of chemotherapy may be in your semen.
- ▶ **Birth control.** It is very important that your spouse or partner not get pregnant while you are getting chemotherapy. Chemotherapy can damage your sperm and cause birth defects.



If you are having sex less often, try activities that make you feel close to each other.

For men AND women:

- ▶ **Be open and honest with your spouse or partner.** Talk about your feelings and concerns.
- ▶ **Explore new ways to show love.** You and your spouse or partner may want to show your love for each other in new ways while you go through chemotherapy. For instance, if you are having sex less often, you may want to hug and cuddle more, bathe together, give each other massages, or try other activities that make you feel close to each other.
- ▶ **Talk with a doctor, nurse, social worker, or counselor.** If you and your spouse or partner are concerned about sexual problems, you may want to talk with someone who can help. This person can be a psychiatrist, psychologist, social worker, marriage counselor, sex therapist, or clergy member.



Ways to learn more

American Cancer Society

Offers a variety of services to people with cancer and their families.

Call: 1-800-ACS-2345 (1-800-227-2345)

Visit: www.cancer.org

Skin and Nail Changes

What they are and why they occur

Some types of chemotherapy can damage the fast-growing cells in your skin and nails. While these changes may be painful and annoying, most are minor and do not require treatment. Many of them will get better once you have finished chemotherapy. However, major skin changes need to be treated right away because they can cause lifelong damage.

Minor skin changes may include:

- ▶ **Itching, dryness, redness, rashes, and peeling**
- ▶ **Sensitivity to the sun** (when you burn very quickly). This problem can happen even to people who have very dark skin color.
- ▶ **Hyperpigmentation**, a problem that results in dark patches on your skin or a darker skin color. Dark patches may occur:
 - Around your joints
 - Under your nails
 - In your mouth
 - Along the vein used to give you chemotherapy
 - Under tape or dressings
 - In your hair
- ▶ **Other nail problems.** Besides becoming darker, your nails may also turn yellow or become brittle and cracked. Sometimes your nails will loosen and fall off, but new nails will grow back in.



Major skin changes need to be treated right away, because they can cause lifelong changes.

Major skin changes can be caused by:

- ▶ **Radiation recall.** Some chemotherapy causes skin in the area where you had radiation therapy to turn red. The color can range from very light to bright red. Your skin may blister, peel, or be very painful.
- ▶ **Chemotherapy leaking from your IV.** You need to let your doctor or nurse know right away if you have burning or pain when you get IV chemotherapy.
- ▶ **Allergic reactions to chemotherapy.** Some skin changes mean that you are allergic to the chemotherapy. Let your doctor or nurse know right away if you wheeze or have trouble breathing along with:
 - Sudden and severe itching
 - Rashes
 - Hives



Let your doctor or nurse know right away if you have burning or pain when you get IV chemotherapy.

Ways to manage

Itching, dryness, redness, rashes, and peeling

- ▶ Sprinkle yourself with cornstarch.
- ▶ Take quick showers or sponge baths instead of long, hot baths.
- ▶ Pat, rather than rub, yourself dry after bathing.
- ▶ Wash with a mild, moisturizing soap.
- ▶ Put on cream or lotion while your skin is still damp after washing. Tell your doctor or nurse if this does not help.
- ▶ Do not use perfume, cologne, or aftershave lotion that has alcohol.
- ▶ Take a colloidal oatmeal bath when your whole body itches. Colloidal oatmeal is a special powder you add to bath water.



Ways to Manage Side Effects

Acne-type rash

- ▶ Keep your face clean and dry.
- ▶ Ask your doctor or nurse if you can use medicated creams or soaps and which ones to use.

Sensitivity to the sun

- ▶ Avoid direct sunlight. During the summer, the sun tends to be the strongest from 10 a.m. until 4 p.m.
- ▶ Use sunscreen lotion with an SPF (skin protection factor) of 15 or higher. Or use ointments that block the sun's rays, such as those with zinc oxide.
- ▶ Keep your lips moist with a lip balm that has an SPF of 15 or higher.
- ▶ Wear light-colored pants, long-sleeve cotton shirts, and hats with wide brims.
- ▶ Do not use tanning beds.



Nail problems

- ▶ Wear gloves when washing dishes, working in the garden, or cleaning the house.
- ▶ Let your doctor or nurse know if your cuticles are red and painful.

Radiation recall

- ▶ Protect the area of your skin that received radiation therapy from the sun.
- ▶ Do not use tanning beds.
- ▶ Place a cool, wet cloth where your skin hurts.
- ▶ Wear clothes that are made of cotton or other soft fabrics. This includes your underwear (bras, underpants, and t-shirts).
- ▶ Let your doctor or nurse know if you think you have radiation recall.

Urinary, Kidney, or Bladder Changes

What they are and why they occur

Some types of chemotherapy damage cells in the kidneys and bladder. Problems may include:

- ▶ Burning or pain when you begin to urinate or after you empty your bladder
- ▶ Frequent, more urgent need to urinate
- ▶ Not being able to urinate
- ▶ Not able to control the flow of urine from the bladder (also called incontinence)
- ▶ Blood in the urine
- ▶ Fever
- ▶ Chills
- ▶ Urine that is orange, red, green, or dark yellow or has a strong medicine odor



Some kidney and bladder problems will go away after you finish chemotherapy. Other problems can last for the rest of your life.



Drink plenty of fluids if you are getting chemotherapy that can damage the bladder and kidneys.

Ways to manage

- ▶ **You will have regular lab tests.** Your doctor or nurse will take urine and blood samples to check how well your bladder and kidneys are working.
- ▶ **Drink plenty of fluids.** Fluids will help flush the chemotherapy out of your bladder and kidneys. See the lists of [Clear Liquids](#) on page 49 and [Liquid Foods](#) on page 50.
- ▶ **Limit drinks that contain caffeine,** such as black tea, coffee, and some cola products.
- ▶ **Talk to your doctor or nurse.** Tell them if you have any of the problems listed above.

Other Side Effects

Flu-like symptoms

Some types of chemotherapy can make you feel like you have the flu. This is more likely to happen if you get chemotherapy along with immunotherapy.

Flu-like symptoms may include:

- ▶ Muscle and joint aches
- ▶ Headache
- ▶ Nausea
- ▶ Chills
- ▶ Fatigue
- ▶ Fever
- ▶ Appetite loss

These symptoms may last from one to three days. An infection or the cancer itself can also cause them. Let your doctor or nurse know if you have any of these symptoms.

Fluid retention

Fluid retention is a buildup of fluid caused by chemotherapy, hormone changes caused by treatment, or your cancer. It can cause your face, hands, feet, or stomach to feel swollen and puffy. Sometimes fluid builds up around your lungs and heart, causing coughing, shortness of breath, or an irregular heartbeat. Fluid can also build up in the lower part of your belly, which can cause bloating.

You and your doctor or nurse can help manage fluid retention by:

- ▶ Weighing yourself at the same time each day, using the same scale. Let your doctor or nurse know if you gain weight quickly.
- ▶ Avoiding table salt or salty foods.
- ▶ Limiting the liquids you drink.
- ▶ If you retain a lot of fluid, your doctor may prescribe medicine to get rid of the extra fluid.

Eye Changes

Trouble wearing contact lenses. Some types of chemotherapy can bother your eyes and make wearing contact lenses painful. Ask your doctor or nurse if you can wear contact lenses while getting chemotherapy.

Blurry vision. Some types of chemotherapy can clog your tear ducts, which can cause blurry vision and watery eyes.

If your vision gets blurry or your eyes water more than usual, tell your doctor or nurse.

Foods to Help with Side Effects

Clear Liquids

This list may help if you have:

- ▶ Diarrhea, see page 21.
- ▶ Urinary, Kidney, or Bladder Changes, see page 47.

Soups

- ▶ Bouillon
- ▶ Clear, fat-free broth
- ▶ Consommé

Drinks

- ▶ Clear apple juice
- ▶ Clear carbonated beverages
- ▶ Fruit-flavored drinks
- ▶ Fruit punch
- ▶ Sports drinks
- ▶ Water
- ▶ Weak, caffeine-free tea

Sweets

- ▶ Fruit ices made without fruit pieces or milk
- ▶ Gelatin
- ▶ Honey
- ▶ Jelly
- ▶ Popsicles

Liquid Foods

This list may help if you:

- ▶ Do not feel like eating solid foods. See [Appetite Changes](#) on page 16.
- ▶ Have [Urinary, Kidney, or Bladder Changes](#), see page 47.

Soups

- ▶ Bouillon
- ▶ Broth
- ▶ Cheese soup
- ▶ Soup that has been strained or put through a blender
- ▶ Soup with pureed potatoes
- ▶ Tomato soup

Drinks

- ▶ Carbonated beverages
- ▶ Coffee
- ▶ Eggnog (pasteurized and alcohol free)
- ▶ Fruit drinks
- ▶ Fruit juices
- ▶ Fruit punch
- ▶ Milk, all types
- ▶ Milkshakes
- ▶ Smoothies
- ▶ Sports drinks
- ▶ Tea
- ▶ Tomato juice
- ▶ Vegetable juice
- ▶ Water

Fats

- ▶ Butter
- ▶ Cream
- ▶ Margarine
- ▶ Oil
- ▶ Sour Cream

Sweets

- ▶ Custard (soft or baked)
- ▶ Frozen yogurt
- ▶ Fruit purees that are watered down
- ▶ Gelatin
- ▶ Honey
- ▶ Ice cream with no chunks, such as nuts or cookie pieces
- ▶ Ice milk
- ▶ Jelly
- ▶ Pudding
- ▶ Syrup
- ▶ Yogurt, plain or vanilla

Replacements and Supplements

- ▶ Instant breakfast drinks
- ▶ Liquid meal replacements

Foods and Drinks that Are High in Calories and Protein

This list may help if you do not feel like eating. See [Appetite Changes](#) on page 16.

Soups

- ▶ Cream soups
- ▶ Soups with lentils, peas, or beans, such as garbanzo, pinto, black, red, and kidney

Drinks

- ▶ Instant breakfast drinks
- ▶ Smoothies
- ▶ Milkshakes
- ▶ Whole milk

Main meals and other foods

- ▶ Beef
- ▶ Butter, margarine, or oil added to food
- ▶ Cheese
- ▶ Chicken
- ▶ Cooked dried peas and bean, such as lentils, garbanzo, pinto, black, red, and kidney
- ▶ Cottage cheese
- ▶ Cream cheese
- ▶ Croissants
- ▶ Deviled ham
- ▶ Eggs
- ▶ Fish
- ▶ Nuts, seeds, and wheat germ
- ▶ Peanut butter
- ▶ Sour cream

Sweets

- ▶ Custards, soft or baked
- ▶ Muffins
- ▶ Frozen yogurt
- ▶ Pudding
- ▶ Ice cream
- ▶ Yogurt, plain or vanilla

Replacements and Supplements

- ▶ Liquid meal replacements
- ▶ Powdered milk added to foods, such as pudding, milkshakes, and scrambled eggs

High-Fiber Foods

This list may help if you have difficulty passing bowel movements. See [Constipation](#) on page 20.

Main meals and other foods

- ▶ Bran muffins
- ▶ Bran or whole-grain cereals
- ▶ Brown or wild rice
- ▶ Cooked dried peas and beans, such as lentils, garbanzo, pinto, black, red, and kidney
- ▶ Whole-wheat bread
- ▶ Whole-wheat pasta

Fruits and vegetables

- ▶ Dried fruit, such as apricots, dates, prunes, and raisins
- ▶ Fresh fruit, such as apples, blueberries, and grapes
- ▶ Raw or cooked vegetables, such as broccoli, corn, green beans, peas, and spinach

Snacks

- ▶ Granola
- ▶ Nuts
- ▶ Popcorn
- ▶ Seeds, such as pumpkin or sunflower
- ▶ Trail mix

Low-Fiber Foods

This list may help if you have loose or watery bowel movements. See [Diarrhea](#) on page 21.

Main meals

- ▶ Chicken or turkey, skinless
- ▶ Cooked refined cereals
- ▶ Cottage cheese
- ▶ Eggs
- ▶ Fish
- ▶ Noodles
- ▶ Potatoes, baked or mashed without the skin
- ▶ White bread
- ▶ White rice

Fruits and vegetables

- ▶ Asparagus
- ▶ Bananas
- ▶ Canned fruit, such as peaches, pears, and applesauce
- ▶ Clear fruit juice
- ▶ Vegetable juice

Snacks

- ▶ Angel food cake
- ▶ Gelatin
- ▶ Saltine crackers
- ▶ Sherbet or sorbet
- ▶ Yogurt, plain or vanilla

Foods that Are Easy on a Sore Mouth

This list may help if your mouth or throat are sore. See [Mouth and Throat Changes](#) on page 32.

Main meals and other foods

- ▶ Baby food
- ▶ Cooked refined cereals
- ▶ Cottage cheese
- ▶ Eggs (soft boiled or scrambled)
- ▶ Macaroni and cheese
- ▶ Mashed potatoes
- ▶ Pureed cooked foods
- ▶ Soups

Sweets

- ▶ Custards
- ▶ Fruit (pureed or baby food)
- ▶ Gelatin
- ▶ Ice cream
- ▶ Milkshakes
- ▶ Puddings
- ▶ Smoothies
- ▶ Soft fruits (bananas or applesauce)
- ▶ Yogurt (plain or vanilla)

Foods that Are Easy on the Stomach

This list may help if you feel queasy or have trouble keeping food down. See [Nausea and Vomiting](#) on page 35.

Main meals

- ▶ Baby food
- ▶ Cooked refined cereals
- ▶ Cottage cheese
- ▶ Eggs
- ▶ Macaroni and cheese
- ▶ Mashed potatoes
- ▶ Pureed cooked foods
- ▶ Soups

Sweets

- ▶ Custards
- ▶ Fruit, pureed or baby food
- ▶ Gelatin
- ▶ Ice cream
- ▶ Milkshakes
- ▶ Puddings
- ▶ Smoothies
- ▶ Soft fruits, such as bananas or peaches
- ▶ Yogurt, plain or vanilla

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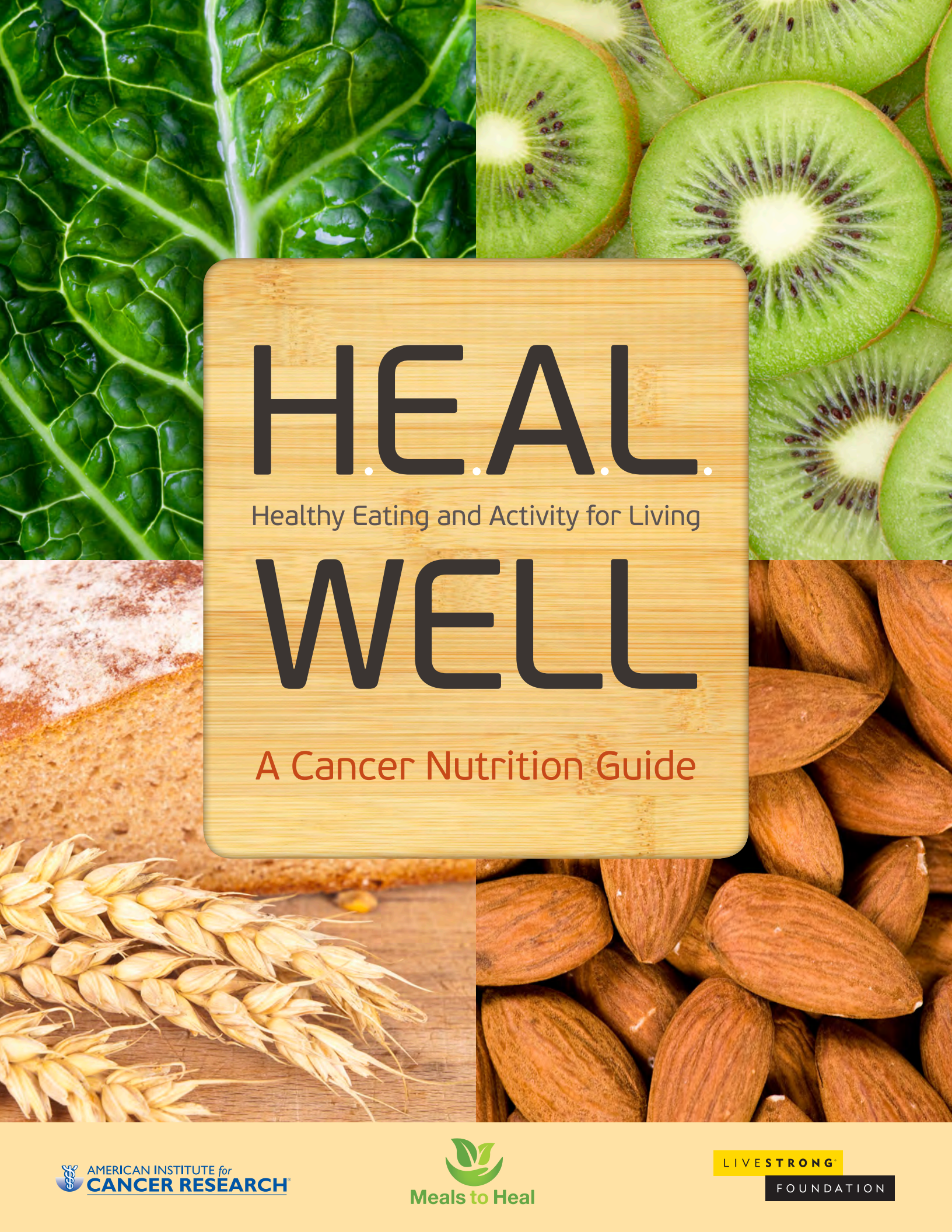


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**NATIONAL
CANCER
INSTITUTE**

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September 2018



HEAL

Healthy Eating and Activity for Living

WELL

A Cancer Nutrition Guide

HEAL Well: A Cancer Nutrition Guide

HEAL Well: A Cancer Nutrition Guide was created through a joint project of the American Institute for Cancer Research (AICR), the LIVESTRONG Foundation, and Meals to Heal™. This guide provides general information regarding nutrition and cancer, addresses common questions people have about diet, nutrition, and physical activity during and after cancer treatment, and offers suggestions for common cancer or cancer treatment-related symptom management. Nutrition problems that may come with cancer and cancer treatment are also covered, including suggestions to help manage possible eating-related difficulties.

The information is evidence-based. This means that it is based in scientific research. However, it is not intended to offer medical advice or replace advice given by your healthcare team. It is important to address all medical questions and concerns about your care with your healthcare team.



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Introduction

Eating a healthy diet and being physically active are very important for people diagnosed with cancer, both during and after cancer treatment. *HEAL Well: A Cancer Nutrition Guide* offers practical suggestions for achieving the following goals after a cancer diagnosis:

1. Achieve and maintain a healthy weight.
2. Be physically active.
3. Select and eat healthy foods and beverages that supply you with nutrients to nourish, repair, and heal your body.
4. Reduce your risk of cancer coming back, the development of another cancer, and other chronic diseases such as heart disease, Type 2 diabetes, and osteoporosis.

Evaluate Nutrition Information

People who have been diagnosed with cancer or a pre-cancerous lesion tend to be highly motivated to improve or maintain their health. Concerned individuals often search for information by reaching out to experts, talking to friends and family, and searching the internet. They want to find ways to reduce the risk of cancer coming back. They may read widely and ask questions in an effort to make healthy changes. However, cancer survivorship research is still in its early stages. Dependable, science-based advice can be hard to find. To separate fact from fiction, there are some things to keep in mind the next time you hear or read about something related to cancer that sounds too good to be true.

Read nutrition information closely.

Science progresses slowly and carefully. That is why when you see health products and diet plans using words like “breakthrough,” “miracle,” or even “discovery,” red flags should appear. Another warning sign is the use of anecdotal evidence (“testimonials” or “case histories”) rather than published scientific research based on results of studies done with many people with cancer.

Maintain a healthy skepticism.

That does not mean you have to cross check each and every scientific study that comes along. Luckily you have already got the most important thing you will need—common sense. If something sounds too good to be true, it probably is. It is also important to realize that science usually moves ahead by consensus—meaning the results of a single study are often not enough to prove a new idea. Medical researchers often accept a new idea as fact only after more than one study has obtained similar results.

Get the whole story.

Reports about science that appear in the media are often too brief to include important details. Refer to published articles from reputable sources and your healthcare team for more complete information. Look for scientific agreement based on a number of studies, and not just the results of one study.

Here are some things to think about:

- Where was the study published? Was the journal peer-reviewed by healthcare professionals or was it published in a magazine?

- Who paid for the study to be conducted?
- How many people were studied?
- How does the study relate to other research in the same field?
- Did the study prove a cause or just establish an association?

Be wary of easy answers.

It is human nature to look for quick fixes that solve health problems, but cancer is complex. There are more than 100 related, but separate, diseases that are called cancer. This is a disease with no single cause, and each individual's experience with cancer is unique.

Go to a reputable source.

These days, everyone has something to say about cancer, nutrition, physical activity, and health. Be sure to talk with your healthcare team before trying any new “cancer-fighting” strategy. For example, certain dietary or herbal supplements, even if labeled “all natural,” may interact with medications being used to treat your cancer.

Healthcare professionals have many years of training and experience, and they work hard to keep up with new developments. Ask to speak to a registered dietitian (RD) or a registered dietitian nutritionist (RDN), preferably one who is also a

certified specialist in oncology nutrition (CSO), about your diet and nutrition questions. Healthcare professionals with these credentials—RD, RDN, and CSO—are certified by the Commission on Dietetic Registration, the credentialing agency of the Academy of Nutrition and Dietetics. In addition, there are board-certified physicians in surgical oncology, medical oncology (chemotherapy), and radiation oncology. There are also board-certified oncology healthcare professionals in nursing, pharmacy, social work, occupational therapy, and physical therapy. Talk to general healthcare providers if you need a referral or a place to start. Oncology specialists are found in large academic centers, medical centers, community cancer centers, and individual clinics and medical practices.

Your oncology healthcare team can provide valuable insights and direction in your efforts for healthy eating and ways to become more physically active during and after your cancer treatment. However, it is important to keep them informed about what you are taking and what diet plans you are following.

The human body is composed of many intricate systems that work together. Foods contain hundreds, perhaps thousands, of components such as nutrients, vitamins, and minerals. The most healthful strategy will always be one that addresses the overall diet, not single foods or dietary supplements.



Diet and the Development of Cancer

1

The Link between Nutrition and Diet and the Development of Cancer

How Does Diet Affect Cancer?

Many factors influence the development of cancer. Over the last 25 years, science has shown that diet, physical activity, and body weight—especially being overweight or obese—are major risk factors for developing certain types of cancer. Your body’s ability to resist cancer may be helped by following a healthy diet, staying physically active, and avoiding excess body fat.

Study after study suggests that a healthful diet—one rich in a variety of vegetables, fruits, whole grains, and legumes (beans), and low in red and (especially) processed meat—can fight cancer. Researchers have known for some time that this general pattern of eating provides vitamins, minerals, and protective and naturally-occurring plant substances known as phytochemicals (phyto = plant) and can help to defend the body against cancer and other diseases.

The scientific community has identified many naturally occurring substances in plant foods with the power to defuse potential carcinogens. Some of these nutrients and natural phytochemicals seek out toxins and usher them from the body before they can cause cell damage that may lead to cancer. Others seem to make it easier for the body to make repairs at the cellular level. Still others may help stop cancer cells from reproducing. Even after a cell begins to experience damage that can lead to

cancer, what you eat and drink, and how you live can still help short-circuit the cancer process.

What Contributes to Chronic Inflammation?

Inflammation is the body’s first response to infection and injury. This process is essential to healing, but too much inflammation or inflammation that goes on for too long can damage cells and their deoxyribonucleic acid (DNA) or cellular genetic material. This damage can lead to higher risk for the development of cancer and other diseases.

Scientists have found that a constant state of low-level inflammation—called “chronic inflammation”—can be caused by being overweight or obese (carrying too much body fat). That is because fat cells constantly make inflammatory cytokines (protein molecules that activate immune cells).

Does Sugar Feed Cancer?

The belief that white sugar in the diet somehow “feeds” cancer is very common, but the truth is more complicated. All cells, including cancer cells, in the body use sugar (glucose) from the bloodstream for fuel. Glucose is the primary fuel for our bodies and our brains. Blood glucose comes from foods containing carbohydrates, including healthful fruits, vegetables, whole grains, and low-fat dairy products. When there is not enough carbohydrate in the diet, some glucose is even produced by the body from protein-containing foods through a special process.

The connection between sugar and cancer is indirect. Eating a lot of high-sugar foods may mean

more calories in your diet than you need, which can lead to excess weight and body fat. It is excess body fat that has been convincingly linked to greater risk of several types of cancer.

Highly refined foods and foods with added sugars, such as sugary drinks and sweets, are also low in fiber and low in nutrients. They add little to the diet except calories. These foods may also increase insulin resistance, and this has been linked to an increased risk of developing diabetes, heart disease, and overweight and obesity.

Should I Only Eat Organically Grown Foods?

There are many reasons why people may prefer to eat foods grown organically with fewer pesticide residues. Eating foods that contain pesticides could increase cancer risk slightly. However, studies clearly affirm that consuming a diet rich in fruits and vegetables, whether grown conventionally or organically, is an important part of a diet that lowers overall cancer risk. If you decide to purchase organic produce, information from the Environmental Working Group (EWG) may be helpful. The EWG has published *The Shopper's Guide to Pesticides in Produce*™ that lists certain foods they call the “dirty dozen plus two” (non-organic fruits and vegetables with the highest amount of pesticides) and the “clean fifteen” (non-organic fruits and vegetables with the least amount of pesticides). The EWG’s



Guide is available at <http://www.ewg.org/foodnews/summary.php/>. According to the EWG, you can use this list to reduce your exposure to pesticide residues, but they say “eating conventionally-grown produce is far better than not eating fruits and vegetables at all.” The bottom line is to eat plenty of vegetables and fruits, whole grains and beans, whether fresh, frozen, dried, cooked, or canned.

Body Weight and Its Link to Cancer Development

The link between excess body fat and cancer was one of the strongest findings from AICR’s report and its continuous updates. These comprehensive reviews of cancer research worldwide calculated that approximately 117,000 cancer cases in the United States each year are linked to excess body fat. Specifically, AICR found that obesity increases risk for at least seven types of cancer: colorectal, postmenopausal breast, kidney, pancreatic, endometrial, gallbladder, and a common variety of esophageal cancer called adenocarcinoma.

How Fat Cells Work and Body Shapes

Fat cells grow when people gain weight and shrink when they lose it. Studies suggest that location of fat cells in the body matters. Fat that accumulates in the abdominal area—lending the body an “apple shape”—is often visceral fat. That means it lies deep inside the abdomen and surrounds vital organs. People with too much visceral fat have been shown to be at greater risk for developing obesity-related diseases and cancer. Another type of fat tissue, subcutaneous fat, is located directly beneath the skin. Sometimes subcutaneous fat is deposited at the waist, but it’s often in the thighs and buttocks, and gives some people a “pear shape.” Studies show that visceral fat tissue (like belly fat) pumps out more inflammatory cytokines and hormones like insulin, leptin, and estrogen. Elevated levels of all these substances are associated with higher cancer risk.

There are two easy methods for assessing body fat. While these methods are not perfect, they can help people assess whether their weight and waist size fall within the healthy range.

BMI Chart

Height	Weight in Pounds (without clothes)													
4'11"	94<	99	104	109	114	119	124	128	133	138	143	148	173	198
5'	97	102	107	112	118	123	128	133	138	143	148	153	179	204
5'1"	100	106	111	116	122	127	132	137	143	148	153	158	185	211
5'2"	104	109	115	120	126	131	136	142	147	153	158	164	191	218
5'3"	107	113	118	124	130	135	141	146	152	158	163	169	197	225
5'4"	110	116	122	128	134	140	145	151	157	163	169	174	204	232
5'5"	114	120	126	132	138	144	150	156	162	168	174	180	210	240
5'6"	118	124	130	136	142	148	155	161	167	173	179	186	216	247
5'7"	121	127	134	140	146	153	159	166	172	178	185	191	223	255
5'8"	125	131	138	144	151	158	164	171	177	184	190	197	230	262
5'9"	128	135	142	149	155	162	169	176	182	189	196	203	236	270
5'10"	132	139	146	153	160	167	174	181	188	195	202	207	243	278
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	250	286
6'	140	147	154	162	169	177	184	191	199	206	213	221	258	294
6'1"	144	151	159	166	174	182	189	197	204	212	219	227	265	302
6'2"	148	155	163	171	179	186	194	202	210	218	225	233	272	311
BMI	19	20	21	22	23	24	25	26	27	28	29	30	35	40

BMI may not be an accurate measure for everyone—including people who have more muscle mass (like athletes), older adults with less muscle mass, or people under 5 feet tall.

To use the table, find your height in the left-hand column. Locate your weight (in pounds) to the right. The number at the bottom of that weight column is the BMI for your height and weight.

Body Mass Index (BMI)

Body Mass Index is a way to measure overweight and obesity. BMI is a measure of body fat based on a person's weight and height. Staying within the healthy range throughout life is important for lowering cancer risk.

There are five BMI categories:

- Underweight: Below 18.5
- Healthy Weight: 18.5 to 24.9
- Overweight: 25.0 to 29.9
- Obese: 30.0 to 39.9
- Extremely Obese: 40.0 and above

Waist Circumference

Waist circumference is another method of assessing body weight and is particularly sensitive to accumulation of visceral fat. Use a measuring tape and follow these easy steps:

Place a tape measure around the waist above the tip of the hipbone.

1. Measure the waist after exhaling.
2. Use the following measurements to determine health risk.
 - For women, a waist measurement of 31.5 inches or more indicates **increased health risk**.
 - For men, a waist measurement of 37 inches or more indicates **increased health risk**.

For Cancer Prevention AICR Recommends:

Be as lean as possible within the normal range of body weight:

- Maintain body weight range within the normal BMI range, starting from the age of 21.
- Avoid weight gain and increases in waist circumference through adulthood.

Avoid foods and drinks that promote weight gain:

- Consume energy-dense foods sparingly (high calories for amount and few nutrients). See Box: *What Are Energy Dense Foods?*
- Avoid sugary drinks.
- Consume “fast-foods” sparingly, if at all.

What Are Energy-Dense Foods?*

- Sugary drinks—soft drinks, sweetened ice tea, juice flavored drinks
- Baked goods such as desserts, cookies, pastries, and cakes
- Candy
- Chips such as potato and corn
- Ice cream, milkshakes
- Processed meat—hotdogs, salami, pepperoni
- Fast food such as French fries, fried chicken, and burgers
- Packaged and processed foods high in added sugars and fats

**Foods containing more than 225–275 calories per 100 grams (3 ½ ounces)*

Diet and Nutrition’s Impact at the Molecular Level

Phytochemicals and Antioxidants

Phytochemicals have the potential to stimulate the immune system, slow the growth rate of cancer cells, and prevent DNA damage that can lead to cancer. The word “phytochemical” means a naturally occurring plant (phyto, in Greek) chemical. Phytochemicals provide a plant with color, aroma, and flavor as well as protection from infection and predators. The colors, fragrances, and taste of the plant hint at the phytochemicals it contains. In the human diet, some phytochemicals work together to protect the body from cancer and other diseases.

Many phytochemicals work as antioxidants. Antioxidants are compounds that protect the body’s cells from oxidative damage—which can come from the water we drink, the food we eat, and the air we breathe. Preventing this type of damage might help protect us from cancer and other diseases. A steady supply of antioxidants from our food is needed to provide protection because of the body’s continuous production of oxidative damage. The best way to provide the body with phytochemicals is to eat a balanced diet that includes whole grains, legumes, nuts, seeds, and a variety of colorful fruits and vegetables.

AICR Recommends:

Eat mostly foods of plant origin:

- Eat at least five portions/servings of a variety of non-starchy vegetables and fruits every day. Examples of a serving: 1 cup raw or cooked vegetables or 1 medium apple.
- Eat whole grains and/or legumes (beans and lentils) with every meal.

Colorful Fruits, Vegetables, and Phytochemicals

Color	Phytochemicals	Fruits and Vegetables
White and green	Allyl sulphides	Onions, garlic, chives, leeks 
Green	Sulforaphanes, indoles	Broccoli, Brussels sprouts, cabbage, cauliflower 
Yellow and green	Lutein, zeaxanthin	Asparagus, collard greens, spinach, winter squash 
Orange and yellow	Cryptoxanthin, flavonoids	Cantaloupe, nectarines, oranges, papaya, peaches 
Orange	Alpha and beta carotenes	Carrots, mangos, pumpkin 
Red and purple	Anthocyanins, polyphenols	Berries, grapes, plums 
Red	Lycopene	Tomatoes, pink grapefruit, watermelon 

Colorful Fruit and Vegetable Recipes

Acorn Squash and Apple Soup

1 medium acorn squash
1 Tbsp. canola oil
1 medium onion, chopped
1 leek (white part only), rinsed well and chopped
1 tart apple (such as Granny Smith), peeled, cored, and chopped
3 cups fat-free, reduced-sodium chicken broth
Milk or additional broth to thin soup (optional)
Salt and freshly ground black pepper, to taste
3 Tbsp. minced fresh mint leaves, as garnish

Preheat oven to 375 degrees. Cut acorn squash in half length-wise, remove seeds. Set on a rimmed baking sheet. Bake until the flesh is tender when pierced, roughly 45 to 90 minutes (depending on size). Remove squash from oven and allow to cool.

While the squash is cooling, in a large, heavy pan heat the canola oil over medium-high heat. Add the onion and leek and sauté for about 4 minutes, until the onion is translucent. Add the apple and cook over medium heat for 1 minute.

Scrape out the squash pulp and combine with the apple mixture. Reduce heat to medium-low, cover and cook for 5 minutes, stirring often. Add the broth to the pan, cover and bring to a boil over high heat. Reduce the heat to low and simmer for about 30 minutes. Remove the pan from heat and set the soup aside to cool slightly.

In a blender or food processor, purée the soup in batches until smooth. Return soup to pan and heat just before serving. Add milk or additional broth to thin soup, as desired. Season to taste with salt and pepper. Garnish each serving with mint and serve.

Makes 5 servings.

Per serving: 103 calories, 3 g total fat (<1 g saturated fat), 18 g carbohydrate, 3 g protein, 3 g dietary fiber, 330 mg sodium.

Holiday Quinoa Salad with Pomegranate and Fresh Herbs

$\frac{3}{4}$ cup quinoa
 $1\frac{3}{4}$ cups water
 $\frac{3}{4}$ tsp. kosher or sea salt, divided
 $\frac{1}{2}$ medium Fuji apple, cored and finely chopped
 $\frac{1}{2}$ cup fresh pomegranate seeds
 $\frac{1}{3}$ cup finely chopped cilantro
 $\frac{1}{4}$ cup finely chopped fresh mint
 $\frac{1}{4}$ cup finely chopped flat-leaf parsley
 $\frac{1}{3}$ cup finely chopped scallions, green and white parts
 $\frac{1}{4}$ cup blood orange juice or orange juice plus 1 teaspoon lemon juice
Freshly ground pepper
2 tsp. extra virgin olive oil

Rinse quinoa in strainer, drain well, and place moist grain in heavy, medium saucepan. Cook over medium-high heat, stirring constantly with wooden spatula until grains stick to bottom of pot and then start to move freely and smell toasty, about 5 minutes. When grains of quinoa start to pop, move pot off heat and pour in $1\frac{3}{4}$ cups water, standing back as it will splatter. Immediately return pot to heat and reduce heat to medium. Add $\frac{1}{4}$ teaspoon salt, cover, and simmer for 15 minutes, or until quinoa is almost tender. Off heat, let grain sit, covered, for 10 minutes. Using fork, fluff quinoa, and transfer it to mixing bowl. There will be about $2\frac{1}{4}$ cups cooked quinoa.

Let quinoa sit until it is room temperature. Add apple, pomegranate seeds, cilantro, mint, parsley, and scallions to grain and, using a fork, mix to combine them.

In small bowl, whisk blood orange juice, or two citrus juices, with remaining $\frac{1}{2}$ teaspoon salt until it dissolves. Add 4-5 grinds pepper, then whisk in oil. Pour dressing over salad and toss with fork to distribute it evenly. Serve within 2 hours. The quinoa and dressing parts of this salad can be made up to 8 hours ahead, then covered and refrigerated separately and combined shortly before serving.

Makes 4 servings.

Per serving: 179 calories, 4 g total fat (<1 g saturated fat), 32 g carbohydrate, 5 g protein, 3 g dietary fiber, 366 mg sodium.

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Diet and Nutrition during Cancer Treatment

2

Good Nutrition During Cancer Treatment

Cancer treatment can place a lot of nutritional demand on your body. It is important to try to consistently consume a healthy diet and to drink nourishing beverages. The main nutritional goals during this time are to maintain a healthy weight and eat healthy foods that supply your body with calories and nutrients for energy, repair, recovery, and healing. A healthful eating pattern includes plenty of vegetables and fruit, moderate amounts of whole grains, and plant protein sources like nuts, beans, lentils, tofu, and tempeh, along with modest portions of fish, poultry, lean meats, and nonfat or low-fat dairy foods.

See pages 21-22 for AICR's specific recommendations for healthy eating and physical activity for reducing risk of new and recurrent cancers.

The New American Plate

2/3 or more vegetables, fruits, whole grains and beans

1/3 (or less) animal protein

The New American Plate

AICR's "The New American Plate" is a valuable resource that shows how to eat in a way to lower cancer risk and to manage body weight. More information is available at <http://www.aicr.org/new-american-plate/> or by calling 800-843-8114.

Choose My Plate

The United States Department of Agriculture's "ChooseMyPlate" is another easy-to-use resource to help people plan their own healthy diet. Use the following link to learn more about this website: <http://www.choosemyplate.gov/>.



Treatment Side Effects That Can Impact Nutritional Well-Being

Side effects of cancer therapy may affect your eating habits and nutritional status. The following pages contain suggestions for managing common eating difficulties during and after treatment.

Changes in Appetite and Unwanted Weight Loss

Loss of appetite is common in people with cancer and can lead to weight loss and undernutrition (malnutrition). Poor nutrition can slow the body's ability to heal. Severe malnutrition can interfere with proper functioning of the heart, liver, kidneys, and immune system.

Try these ideas for improving your appetite and maintaining calorie and protein intake during cancer treatment:

- Eat five or six smaller meals per day.
- Eat the largest meal when you are hungriest.
- Start with high-protein foods while your appetite is strongest.
- Keep favorite high-calorie foods and beverages within easy reach.
- Try to be as physically active as you are able to be to help stimulate your appetite.
- Enlist the help of your loved ones and caregivers to help with purchasing and preparing food.
- Ask to talk with a registered dietitian for personalized help.
- In certain situations, your doctor may prescribe a medication to help improve your appetite.



Nausea and Vomiting

Nausea and vomiting can be caused by chemotherapy or from radiation therapy to the stomach, abdomen, or brain. Being nauseated or vomiting because of cancer treatment can make it difficult for a person to eat and drink.

Try these ideas for managing nausea and vomiting:

- Eat small amounts of food more often.
- Small portions of meals and snacks are often more easy to tolerate than large.
- Eating foods and sipping on clear liquids at room temperature or cooler may be easier to tolerate.
- Avoid high-fat, greasy, spicy, or overly sweet foods.
- Avoid foods with strong odors.
- Sip on beverages between meals rather than with meals.
- Eat sitting up and keep head raised for about an hour after eating.
- For vomiting, avoid eating or drinking until vomiting is controlled—then try sipping on small amounts of clear liquids such as cranberry juice or broth. Nibbling on plain foods such as pretzels or crackers may also help.
- Take anti-nausea medicine as prescribed. If it is not controlling symptoms, contact the healthcare professional that prescribed the anti-nausea medicine, and let him or her know what is happening.

Evaluate if you are feeling indigestion or reflux versus nausea. Discuss your symptoms with your healthcare professional as treatment options for each condition vary.

Fatigue

Fatigue is the most common side effect for those diagnosed with cancer. It can be related to the cancer itself or can be one of the effects of cancer treatment. Eating regularly and being as physically active as you are able may help to relieve your fatigue and enhance your mood.



Try to drink plenty of fluids. Being dehydrated can make fatigue worse.

Try these ideas for managing fatigue:

- Temporarily rely on ready-to-eat foods like frozen dinners, fruits, and vegetables.
- Prepare food when you feel your best and freeze leftovers in meal-size portions.
- Try to drink plenty of fluids. Being dehydrated can make fatigue worse. Aim for at least 8 cups of hydrating fluid each day unless advised to restrict fluids for another medical condition. Hydrating fluids include water, clear juices, sports drinks, broth, or weak tea.
- Accept help with meals from friends and family members. Check for delivery services like Meals on Wheels™ (available at <http://www.meals-on-wheels.com/>) or a home delivery meal service such as Meals to Heal™ (available at <http://meals-to-heal.com/> or 888-721-1041).

Bowel Changes: Diarrhea and Constipation

Diarrhea can be caused by the cancer itself, certain chemotherapy agents and medicines, or because of radiation therapy to the abdomen and pelvis. Diarrhea is having frequent and loose watery stools.

Try these ideas for managing diarrhea:

- Drink plenty of liquids such as water, clear juices, sports drinks, broth, weak tea, or oral rehydration solutions (available over-the-counter at most pharmacies).
- Eat small amounts of soft, bland foods. Consider a diet that consists of water soluble fiber-containing foods such as bananas, white rice, applesauce, and white toast.
- Decrease intake of high fiber foods during this time. These include foods containing nuts and seeds, raw vegetables and fruits, and whole grain breads and cereals.
- Eat small amounts of food throughout the day rather than fewer large meals.
- Take anti-diarrhea medicine as prescribed. If the medicine is not controlling the diarrhea, call the healthcare professional that prescribed the medicine.

Constipation can be a symptom of the cancer itself or it can be caused by medicines used to treat cancer or manage pain. Constipation is when bowels do not move regularly and when stools become hard and difficult to pass.

Try these ideas for managing constipation:

- Drink more healthy beverages to help keep your digestive system moving, especially water, prune juice, warm juices, decaffeinated teas, and hot lemonade.
- Increase intake of high fiber foods such as whole grains, fresh and cooked vegetables, fresh and dried fruits, and foods containing peels, nuts, and seeds.
- Work with your healthcare team to set up an individualized bowel regimen. This program may include stool softeners and gentle, non-habit forming laxatives.
- Increase your physical activity as you are able, such as taking a walk or doing limited exercise every day. Ask your healthcare team how much exercise is right for you.

Changes in Taste and Smell

Changes in taste and reactions to smells are common problems that can happen while undergoing and recovering from cancer treatment. These changes can affect your desire to eat.

Try these ideas for managing taste and smell changes:

- Choose foods that appeal to you. Often, moist and naturally sweet foods such as frozen melon balls, grapes, or oranges work well. Some find tart foods and beverages appealing.
- Try eating cooler temperature foods, rather than hotter temperature foods, as they have less aroma and taste.
- Try marinades and spices to mask strange tastes.
- Red meat often becomes less appealing, so try poultry, fish, beans, nut butters, or eggs.
- If foods taste bitter or salty, try adding small amounts of sugar.
- Brush your teeth and tongue and rinse your mouth regularly, especially before eating.
- Rinse your mouth several times a day with 1 to 2 ounces of a homemade salt and baking soda solution (one quart of water combined with one teaspoon of salt and one teaspoon of baking soda) or an alcohol-free mouth rinse.

Sore Mouth or Throat

A common side effect of certain chemotherapy agents or radiation therapy to the mouth and throat is an inflammation of the mucus membranes that line the mouth and throat. This condition is called *mucositis* and it can make it difficult to eat and swallow.

Try these ideas for managing a sore mouth or throat:

- Eat soft, moist foods with extra sauces, dressings, or gravies.
- Avoid dry, coarse or rough foods.
- Avoid alcohol, citrus, caffeine, vinegar, spicy foods, and acidic foods (like tomatoes).

- Experiment with temperatures of foods (warm, cool, or icy) to find which temperature is the most soothing.
- Drink plenty of fluids. Focus on warm or cool milk-based beverages, non-acidic fruit drinks (diluted if necessary), “flat” carbonated beverages, and cream or broth-based soups.
- Rinse your mouth several times a day with 1 to 2 ounces of a homemade salt and baking soda solution (one quart of water combined with one teaspoon of salt and one teaspoon of baking soda). Sip, swish, and then spit the solution to rinse and clean your mouth. Do not swallow.
- Speak with your healthcare professional about medications that can numb or soothe your mouth or throat.

Unwanted Weight Gain

Weight gain can occur during or after treatment for hormone-sensitive cancers such as breast or prostate cancers. Inactivity can also cause weight gain. In addition, medicines such as steroids used as a part of some cancer treatments can contribute to increased weight.

Try these ideas for managing unwanted weight gain:

- Try to focus on foods naturally low in calories and high in fiber to help you feel full, such as vegetables, fruits, whole grains, and beans. Include small amounts of higher calorie foods that you enjoy most, and be sure to savor them for the most satisfaction.
- Pay attention to portion sizes and fill most of your plate with lower calorie plant foods.
- Eat only when you are physically hungry.

Try to get regular physical activity to help you reduce fatigue, control weight gain, and improve mood.

Low White Blood Cell Counts and Infection

Cancer and cancer treatment can weaken the immune system and increase the risk of infection. White blood cells are an essential part of the body's defense against infection because they attack and destroy germs after they enter the body. The risk of infection increases as the number of white blood cells decreases as the result of some cancer treatments. This condition is called neutropenia. If you develop neutropenia it is very important to protect yourself against infection. Contact your healthcare team right away if you think an infection is developing.

The following may be signs of infection:

- A temperature greater than 100.5° F.
- Fever

- Shaking, chills
- Swelling or redness of any part of the body

If you experience a period of time when your white blood cell counts are low, eat a “safe food” diet to avoid harmful bacteria and food-borne illness.

Follow these “safe food” suggestions when your white blood cell counts are low:

- Do not eat raw or undercooked animal products, including meat, pork, game, poultry, eggs, and fish.
- Wash all fresh fruits and vegetables.
- Avoid eating foods from salad bars, delicatessens, buffets, and smorgasbords.
- Do not drink untested well water or water directly from lakes, rivers, streams, or springs.
- If using filtered water, change the filter regularly.



Food Safety Tips

These food safety tips are especially important for people undergoing and recovering from cancer treatment:

- Wash hands frequently. Use plenty of soap and hot, running water for at least twenty seconds. Use hand sanitizer for cleaning hands when soap and water are not available. Wash or sanitize hands:
 - After using the restroom.
 - Before eating.
 - Before and after each step of food preparation.
 - After handling garbage.
 - After touching pets.
 - After sweeping the floor or wiping down the counters.
- Keep cutting boards, countertops, and utensils thoroughly cleaned. Change, launder, and discard sponges and dish towels often.
- Separate and do not cross-contaminate.
 - Keep raw meat, poultry, seafood, and eggs away from ready-to-eat foods.
 - Always use separate cutting boards for raw meat, poultry, and fish.
- Cook food thoroughly at proper temperatures. Use a food thermometer to make sure foods are safely cooked. Cook foods to the following internal temperatures:
 - Steaks and roasts—145° F.
 - Fish—145° F.
 - Pork—160° F.
 - Ground beef—160° F.
 - Egg dishes—160° F.
 - Chicken breast—165° F.
 - Whole poultry—165° F.
 - Reheat hotdogs until steaming hot or 165° F.
- Properly wrap and refrigerate foods promptly. Refrigerate or freeze leftover foods within one hour to limit growth of bacteria.
 - Set the refrigerator between 34° F and 40° F.
 - Keep the freezer set to 0–2° F or below.
- Thaw frozen meat and poultry in the refrigerator, microwave, or cold water. Do not leave it out on the kitchen counter. Pay attention to food product expiration dates. If in doubt, throw it out.



Wash hands frequently. Use plenty of soap and hot, running water for at least twenty seconds. Use hand sanitizer for cleaning hands when soap and water are not available.



Dietary Supplements

3

Dietary Supplements

Although the vast majority of people in the United States have access to a healthy diet, dietary supplement use is common among Americans. Studies report that over 50 percent of all American adults use dietary supplements. In addition, between 60 percent and 80 percent of people with cancer have taken supplements before, during, and/or after their diagnosis and treatment. Cancer survivors take dietary supplements for a variety of reasons: in hopes of stopping cancer; on the advice of family, friends, and healthcare providers; in order to strengthen their immune system; and to take care of symptoms and side effects of cancer and its treatment.

The Dietary Supplement Health and Education Act (DSHEA) of 1994 defines dietary supplements as products taken by mouth that contain “dietary ingredients” used to supplement the diet. Dietary ingredients are vitamins, minerals, herbs, botanicals, and substances like amino acids, enzymes, metabolites, or organ tissues. These supplements come in many forms such as tablets, capsules, softgels, gelcaps, liquids, tinctures, teas, extracts, concentrates, or powders.

There is much controversy concerning the use of dietary supplements during cancer treatment—especially antioxidants. Of concern is the possibility that dietary supplements may interact with a person’s cancer treatment and perhaps make the treatment less effective. Some research shows that large doses of nutrients from dietary supplements may actually keep cancer cells from being destroyed by interfering



with conventional therapy. Other studies show the opposite. In general, the protective nutrients and compounds in whole foods are far preferable to those in large dose supplements.

Cancer Experts Suggest the Following Regarding Dietary Supplement Use:

- Dietary supplements should not replace nutrient-rich foods in the diet. Eat a wide variety of plant-based foods, including at least five servings per day of non-starchy vegetables and fruits.
- Dietary supplements are not recommended for cancer prevention.

- If you are considering starting to take dietary supplements or if you are already using them, review all products with your cancer healthcare team.
- Dietary supplementation may be recommended and prescribed for you by your healthcare team for specific medical conditions, such as osteoporosis and iron-deficiency anemia.
- Supplementation should be directed and supervised by your cancer healthcare team.



Reliable sources for evaluating dietary supplements and possible benefits and concerns are available at:

- Natural Standard Database: Available from Meals to Heal website at <http://meals-to-heal.com/nutritional-resources/supplements-herbs-and-botanicals/>
- Natural Medicines Comprehensive Database: Available at <http://naturaldatabase.therapeuticresearch.com/home>
- National Institutes of Health: Available at <http://www.nlm.nih.gov/medlineplus/dietarysupplements>
- Memorial Sloan-Kettering Cancer Center: About Herbs, Botanicals, and Other Products available at <http://www.mskcc.org/cancer-care/integrative-medicine/about-herbs-botanicals-other-products>

Providing references to other organizations or links to other websites does not imply endorsement of the information or services provided by the resource organization. Those organizations are solely responsible for the information they provide.



Physical Activity for People with Cancer

4

The Importance of Physical Activity

A growing number of studies suggest that physical activity may help to reduce the risk of some secondary cancers and recurrence of certain cancers. Physical activity may also help improve tolerance of cancer treatment and the quality of life during and after cancer treatment. The old advice to “just get plenty of rest” during cancer treatment has been updated. An expert panel convened by the American College of Sports Medicine (ACSM) concluded that exercise training is safe and beneficial for cancer survivors after—and even during—treatment. Studies have demonstrated that exercise, when carefully monitored by the healthcare team, is a powerful tool to improve endurance, sense of well-being, and self esteem, while lessening fatigue and depression. Most experts now recommend that people with cancer become and stay as physically active as they safely can.

Carefully supervised, moderate physical activity has been shown to benefit people with cancer both during and after cancer treatment.

Physical activity can help improve the following areas:

- Quality of life
- Maximum walking distance
- Muscle mass
- Muscle strength and power
- Aerobic fitness
- Flexibility

Physical activity may help decrease these common side effects of cancer and cancer treatment:

- Nausea
- Fatigue
- Stress
- Anxiety
- Depression
- Body fat
- Resting blood pressure
- Length of hospitalization

The Role of Physical Activity in Managing Cancer Treatment Side Effects

Fatigue

Physical activity can help manage fatigue, one of the most common side effects of cancer treatment. Fatigue can impact many aspects of life. The idea that being more active can make an already tired person feel less tired might seem surprising. But that is exactly what a consistent body of research conducted among cancer survivors now shows. Light exercise can help people in cancer treatment feel more rested and energetic.

Weight Loss

People who lose weight during cancer treatment can often end up losing both fat and muscle mass.

Regular exercise, particularly resistance exercise, can help restore and even prevent loss of muscle mass during treatment.

Weight Gain

Some people undergoing cancer treatment may gain weight rather than lose it—and the weight gain often comes with a loss of muscle. A possible side effect of certain types of cancer treatments is a gain of fat mass. Endurance exercise such as walking and biking may help with weight maintenance activities during treatment. To keep from losing muscle mass, try to combine cardiovascular exercises with resistance exercises.

Cardiovascular Concerns

Some cancer treatments can lead to heart problems (cardiotoxicity) and damage to surrounding blood vessels either during treatment or after treatment. This damage may increase the risk of cardiovascular disease later on. There is now emerging evidence that exercise can help to lessen treatment-related cardiotoxicity and help restore cardiovascular function, even years after cancer therapy is completed.

Physical Activity and Its Role in Survivorship

You may not feel like exercising because of fatigue and other side effects. But becoming physically active can help you feel more energetic. The long-term benefits include enhanced bone and muscle strength, better circulation, and improved mood. In addition, physical activity seems to protect against cancer and promote health both directly and indirectly.

Directly, getting regular activity may:

- Reduce the body's levels of estrogen and other hormones that could promote cancer.
- Help to reduce inflammation.

Indirectly, physical activity may:

- Reduce the risk of unwanted weight gain when combined with a sensible, healthy diet. That is important because carrying excess fat is itself a risk factor for postmenopausal breast cancer, colorectal cancer, esophageal cancer, endometrial cancer, kidney cancer, pancreatic cancer, and gallbladder cancer.

Getting Regular Physical Activity Every Day Can Help People with Cancer to:

- Recover more quickly.
- Have a better quality of life, including getting support from peers and instructors in physical activity classes.
- Improve mood and thinking.
- Help to reduce joint pain associated with some breast cancer treatment medications (such as aromatase inhibitors).

How to Get Started Being Physically Active:

- Talk with the healthcare team providing your cancer care before beginning any exercise program.
- If not exercising regularly, start slowly and gradually increase physical activity intensity and duration.
- Ask your healthcare team about having a cancer rehabilitation assessment (many insurers now cover a certain amount of rehabilitation for individuals with cancer).

The American Cancer Society in Their 2012 Nutrition and Physical Activity Guidelines for Cancer Survivors Recommends People Diagnosed With Cancer:

- Check with your healthcare provider regarding the right physical activity for you.
- Engage in regular physical activity.

- Avoid inactivity and return to normal daily activities as soon as possible following diagnosis.
 - Aim to exercise at least 150 minutes per week.
 - Include strength training exercises at least 2 days per week (exercises in which you work against resistance such as weights), with your healthcare provider’s approval.
3. Make sure you have exercise shoes that are comfortable and fit you well.
 4. Start very slowly—a few minutes of a recommended activity such as walking or riding a stationary bike each day is a good way to get started.
 5. Take short walks in a safe, low-stress environment.

Suggestions for Creating an Exercise Program That Is Right for You

1. Talk with your healthcare team before beginning a physical activity program. Check your physical activity plan with your cancer healthcare professional. Ask for advice about the type of exercise program that will be best for you. A cancer rehabilitation assessment before you begin physical activity can help define the best exercise program for you.
2. Do very easy movements for short periods of time each day, even if just a few minutes. If you can, get started under the guidance of a physical therapist or certified fitness trainer.
6. If you need encouragement, find an exercise class with a certified fitness instructor, personal trainer, or physical therapist who can help you get started. Certified fitness professionals are trained in CPR and first aid and are familiar with exercises that can safely help different parts of the body. They can help you customize activities to your needs. If your insurance does not cover a certified fitness professional or physical therapist, call the local hospital, YMCA, or county recreation department to find a class that is very easy and gentle.
7. Do what is best for you as an individual, even if it is light exercise that seems like very little. Start by lifting half-pound weights three times

As outlined by the Centers for Disease Control and Prevention, examples of moderate and vigorous activities include:

Moderate Activities (“I can talk while I do them, but I can’t sing”):	
Canoeing	Biking on level ground or with a few hills
Water aerobics	Ballroom or line dancing
Walking briskly	General gardening (raking or trimming shrubs)
Tennis (doubles)	Sports where you can catch and throw (softball, volleyball)
Using a manual wheelchair	

Vigorous Activities (“I can only say a few words without stopping to catch my breath”):	
Aerobic dance	Biking faster than 10 miles per hour
Fast dancing	Heavy gardening (digging, hoeing)
Hiking uphill	Race walking, jogging, or running
Tennis (singles)	Sports with a lot of running (basketball, hockey, soccer)
Martial arts	Swimming fast or swimming laps
Jumping rope	

a week for the first week or two, and then move up to one-pound weights, 1 1/2 pounds, etc.

8. As you get stronger, think about adding more physical activity to your schedule. Think about getting F.I.T.T. (see box). Using these four letters, you can remember the key components of a physical activity program: frequency, intensity, time, and type.

Resources to Help You with Your Physical Activity

- Specially trained oncology rehabilitation experts are available to help cancer survivors with concerns about lingering cancer and cancer treatment-related side effects. These healthcare professionals include physiatrists (doctors that specialize in rehabilitation medicine), physical therapists, occupational therapists, and speech-language pathologists. They can help to treat and manage medical conditions such as arm or neck pain, lymphedema, post-surgery concerns, and difficulty with swallowing. To find a cancer rehabilitation program or specially trained clinician visit the Oncology Rehab Partner's STAR Program® (Survivorship Training and Rehabilitation) website at: <http://www.oncologyrehabpartners.com/>. If there is not a STAR Program in your area, ask your healthcare professional for a referral to your hospital's rehabilitation program.
- You can seek help with physical activity planning from a specially trained fitness expert. For example, the American College of Sports Medicine (ACSM) certifies athletic trainers. Certified Cancer Exercise Trainers (CETs) work with people affected by cancer to develop individualized exercise programs. To learn more about CETs and how to find a certified professional visit the ACSM website at: <http://www.acsm.org>.

Suggestions for Becoming F.I.T.T.



Frequency: refers to how often you are physically active and is usually measured in days per week.



Intensity: describes how hard your body is working during physical activity, and it is often described as light, moderate or vigorous.



Time: measures how long you spend being physically active during your daily routine.



Type: describes what kind of activity you choose such as walking, gardening, hiking, biking, weight training, household chores or playing golf.

- Together, the LIVESTRONG Foundation and the YMCA of the USA have created a free, 12-week YMCA-managed program for adult cancer survivors. This group-based physical activity and well-being program is offered at more than 270 YMCAs across the country with more than 13,000 cancer survivors completing the program since 2008. To learn more about the LIVESTRONG at the YMCA program and where you can find one, visit: <http://livestrong.org/ymca>.



Cancer Survivorship and Beyond

5

The Role of Diet and Lifestyle in Reducing the Risk of Cancer Recurrence

Research on nutrition and physical activity recommendations for cancer survivors to prevent or reduce the risk of cancer recurrence, secondary cancers, and other chronic diseases is still in an early stage. There are no guarantees. Yet results from recent population studies show health benefits for cancer survivors who maintain a healthy weight, follow a healthy diet, and engage in physical activity on a regular basis.

AICR Guidelines for Cancer Prevention and Risk Reduction

AICR's report and its continuous updates found evidence that cancer survivors should follow the

same diet and physical activity recommendations for reducing risk of cancer.

Body Weight

Research conducted over the last few years has established the central importance for cancer survivors to maintain a healthy weight—and *to be as lean as possible without being underweight*. Having a healthy weight seems to establish a biochemical status or “anti-cancer” environment that discourages cancer growth. The research clearly shows that carrying extra body fat—particularly excess abdominal body fat—means a higher risk for certain cancers.

Eat a Plant-based Diet

Evidence suggests that dietary patterns emphasizing plant-based foods promote health and may reduce cancer risk for survivors. A practical way to do this is to make a habit of filling at least 2/3 of your plate



Many cancer survivors find that they feel better if they incorporate healthy behaviors into their daily routine. Eating right for your health needs and including some exercise that relates to your recovery needs may improve how you feel. It may also reduce your risk for cancer and other major health problems. Ask your healthcare team about your particular risk factors so you know what things you should avoid.

with vegetables, fruits, whole grains, legumes, and nuts, while apportioning 1/3 or less of your plate to poultry, fish, lean meats, and low-fat dairy and plant-based proteins. (see page 9 for AICR's New American Plate graphic).

Be Physically Active as Part of Everyday Life

Be moderately physically active for at least 30 minutes every day, and as you become more fit, work toward 60 minutes. Aim to build more activity, like brisk walking, into your daily routine. In addition, limit how much time you are sedentary, like sitting in front of the TV or computer. A sedentary way of life is a cause of weight gain, overweight, and obesity that increases risk for several types of cancer.

Limit Consumption of Red and Processed Meats

Limiting cooked red meat (e.g., beef, pork, lamb, and game) to 18 oz. or less per week and avoiding processed meat like cold cuts, bacon, sausage, and ham helps lower risk for colorectal cancer. Because cancer survivors are at greater risk for other chronic diseases such as heart disease, eating less red and processed meat can help improve overall health. Try to go meatless several times a week. Opt for meatless meals such as a vegetable stir-fry, hearty bean soups, or black bean burritos.

Limit Alcoholic Beverages

Despite some evidence linking moderate alcohol consumption to lower risk for heart disease, this protective effect does not apply to some cancers. AICR recommends avoiding even small amounts of alcohol. Alcohol increases risk for cancers of the colon and rectum, breast, esophagus, mouth, and liver. If cancer survivors choose to drink, limit intake to one drink a day for women and two for men.

In this case, one drink is defined as:

- 12 ounces of beer
- 1.5 ounces of 80-proof distilled spirits
- 5 ounces of wine

Avoid Sugary Drinks and Energy-dense Foods

Research links sugary drinks like regular sodas, and energy-dense foods, including many fast foods and

foods with added fat and sugar, with weight gain, overweight, and obesity. And excess body fat is a cause of several types of cancer.

Energy-dense foods are defined as:

- High-fat, high calorie snack foods
- “Fast foods”—or prepared baked goods, desserts, and sweets
- Convenience foods or “on the go foods” not requiring cutlery (spoons, forks, or knives) such as hotdogs, hamburgers, French fries, corn chips, or potato chips.

Do Not Use Tobacco Products

Tobacco in any form is a major cause of cancer and the use of tobacco products should be entirely avoided. If you are currently smoking, using chewing tobacco, smoking from a hookah, or using tobacco in any form, ask your healthcare team for help to find a way to quit.

Limit Consumption of Salty Foods and Foods Processed with Salt (Sodium)

Consuming too much salt can be harmful to our health, increasing risk of stomach cancer as well as high blood pressure. Most salt in Americans' diets comes from processed foods, such as boxed, canned, and frozen prepared items, as well as from fast foods and other restaurant foods.

Additional AICR Recommendations:

Aim to Meet Nutritional Needs through Diet Alone

To reduce your risk of cancer, choose a balanced diet with a variety of foods rather than taking supplements.

In general, the best source of nourishment is food and drink, not dietary supplements. Nutrient-rich whole foods contain substances that are necessary for good health, like fiber, vitamins, minerals, and phytochemicals. Plant-based foods are the source of many cancer-fighting compounds.



Answers to Common Questions about Diet, Nutrition, and Cancer

6

Answers to Common Questions about Diet, Nutrition, and Cancer

Q **Macrobiotic Diet: Is It True That Following a Macrobiotic Diet Can Cure Cancer?**

There is no evidence that a macrobiotic diet can cure or prevent disease. The diet was designed to help promote health in already healthy people. Because it is based on grains, vegetables, seaweed, beans, and various soups, a macrobiotic diet requires care and planning, and can be expensive. When undergoing and recovering from cancer treatment, survivors may find macrobiotic dietary



recommendations challenging and restrictive, thus limiting in terms of needed calories and protein required for maintaining body weight, strength, and energy.

Q **Juicing: Is It Okay to Juice During Cancer Treatment?**

Juicing can be a great way to add a variety of fruit and vegetables and naturally-occurring phytochemicals to the diet. However, relying only on juices for nutrition while undergoing or recovering from cancer treatment is not recommended. Cancer survivors should strive to eat a diet containing enough protein and calories for maintaining body weight during cancer treatment. It is important to thoroughly wash all fruits and vegetables before adding them to the juicer.

Q **Vegetarian Diets: Does Following a Vegetarian Diet Reduce the Risk of Cancer Recurrence?**

A vegetarian diet may be a healthier alternative to Western diets in general, but there is no clear evidence that a vegetarian diet is more protective against cancer than a mostly plant-based diet containing small amounts of lower fat meat and dairy foods. A vegetarian meal plan should include a variety of foods, including many different colorful vegetables and fruits, whole grains, and protein alternatives to meat (such as beans, eggs, tofu, fish, or small amounts of reduced-fat cheeses).

Q Soy Foods and Soy Products: Can Women with Breast Cancer Eat Soy or Soy-Containing Foods?

Soy foods contain several key nutrients and phytochemicals studied for their cancer prevention properties. Many soy foods also contain dietary fiber, which may lower risk of colorectal cancer. Soy foods contain isoflavones, which are phytoestrogens that in some ways mimic the action of estrogen but are very weak. Because high levels of estrogen link to increased breast cancer risk, there was a fear that soy foods—and the isoflavones in them—could increase risk. Yet overall, human studies show soy foods do not increase risk and in some cases, research suggests soy may lower risk. For breast cancer survivors, population studies do not show any harmful interactions between soy foods and anti-estrogen medications. A small number of studies even suggest soy foods may be most

protective for women who take anti-estrogen agents or aromatase inhibitors, but more research is needed before experts do more than encourage moderate consumption of whole soy foods (1 to 2 servings per day) as a low-fat protein.

Q Organic Foods: Are Organic Foods Better, Healthier Cancer Fighting Foods?

The term “organic” is defined as foods grown on contaminant-free land without pesticides or herbicides. There are many reasons why people choose organic foods, but at this time it is not known whether organic foods help reduce cancer risk more than non-organic counterparts. If you do opt for organic, remember that organic cookies, chips, and other snacks can contain exactly the same amount of calories, fat, and sugar as conventional brands and are not deemed “healthy” simply because they are organic.





Resources

7

AICR's Standard Serving Size Guide

http://preventcancer.aicr.org/site/PageServer?pagename=elements_serving_size

Meals to Heal's Guide to Eating Out

http://meals-to-heal.com/wp-content/uploads/2013/03/MTH-Eating-Out-Guide3_4_13-compressed.pdf

LIVESTRONG's Communicating with Your Healthcare Team

<http://livestrong.org/Get-Help/Learn-About-Cancer/Cancer-Support-Topics/Practical-Effects-of-Cancer/Communicate-With-Your-Health-Care-Team>

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PeaceHealth Patient Financial Services

If you have questions about billing, assignment, or other issues related to your account with PeaceHealth Ketchikan Medical Center or PeaceHealth Medical Group, our Patient and Financial Services is available to help you.

You can contact a billing services team member by phone. One of our team members is happy to assist you with any questions or concerns you may have.

Contact Us:

(877) 202-3597

Make a Payment By Mail:

Send you hospital or clinic payment to

PeaceHealth
PO Box 748632
Los Angeles, CA 90074-8632

Make a Payment Online:

Visit my.peacehealth.org where you can set up an online account that will allow you to pay your PeaceHealth Medical Group bills online.

Find More Billing Information Online:

<https://www.peacehealth.org/patient-financial-services>

Important Notice

REGARDING PATIENT PRICE ESTIMATES

As a service to our patients, PeaceHealth Ketchikan Medical Center provides price estimates for many of the most commonly requested medical services, diagnostic tests, and procedures performed at the Medical Center.

While we make every effort to ensure the accuracy of our price estimates, please understand that the costs associated with medical care and diagnostic testing can vary substantially, depending on each individual's medical needs and circumstances. Because we cannot anticipate all of the charges that might be incurred during a course of treatment, we cannot determine in advance the exact total cost of a procedure. This means that the final bill may be greater than or less than any estimate provided.

PeaceHealth Ketchikan Medical Center and PeaceHealth Medical Group make no guarantees regarding the accuracy of the pricing information posted here and shall not be held liable for any inaccuracies.

To request a price estimate for a medical center/hospital service(s):

1. **Obtain Current Procedural Terminology (CPT) and name of procedure or test.**
 - Talk to your Health Care Provider and they will provide you with a procedure code. This information allows us to provide the most accurate estimates.
 - We do our best to respond to your call within 48 hours Monday—Friday.
2. **Call our toll-free estimates line at 844-212-1049, Option 2.**
3. **Choose Option 6** for Ketchikan Medical Center (hospital) services.

Leave a message with the following information:

 - **Facility Location:** Ketchikan Medical Center
 - **Name:** Caller or patient name.
 - **Phone number:** Best number to contact you.
 - Please indicate if it is **OK for us to leave a message** on your voice mail.
 - **Name of Procedure or Test:** Provided by your Care Provider or Doctor.
 - **CPT Code:** Provided by your Care Provider or Doctor.
 - Indicate if this will be an **inpatient or outpatient** procedure.
4. **Call your insurance,**
 - **Verify this procedure is covered** with your current benefit package.
 - **Determine any limitations or restrictions** with your policy coverage.
 - **Find out your annual deductible/co-pay, co-insurance amounts.**



Cornelia "Pinky" Brindle Cancer Resource Center

Improving the quality of life for those facing cancer in Southeast Alaska



A cancer diagnosis can be overwhelming; getting a cancer diagnosis in our island community is even more of a challenge. The Cornelia Pinky Brindle Cancer Resource Center was established thanks to a generous donation from the Brindle family, to honor the memory of their wife and mother Pinky Brindle. The Center supports wellness and healing by providing patients and their loved ones with information, emotional support, and community resources. The staff at Center are here to listen and help you receive the support and access to services you need. There is never a charge for our services.

Out of an abundance of caution and a temporary measure, the Cornelia "Pinky" Brindle Cancer Resource Center has been relocated to the PeaceHealth Ketchikan Medical Center Foundation building at 121 Carlanna Lake Road where we are able to provide supplies at curbside. Simply call or email us for assistance.

Resources Available:

Nursing Consultations
Patient Navigator
Spiritual Care & Chaplin Support
Social Services Consultations
Physical Therapy Referrals

Dietary Consultations
Financial Assistance & Billing Information
Hair loss and mastectomy products
Support Groups
Library & Reference Materials

CONTACTS

Jackie Jones-Bailey

907-228-8300 x 8830

KGHCancerResourceCenter@peacehealth.org

Infusion Nursing Staff

907-228-8300 x 7865



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Ketchikan Medical Center

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