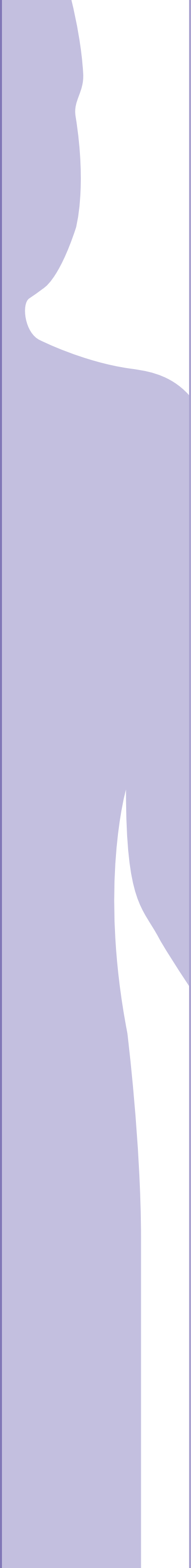
National Cancer Institute



What You Need
To Know About™

Cancer of the Esophagus

U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES

National Institutes of Health

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This is only one of many free booklets for people with cancer.

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- Call the NCI's Cancer Information Service at **1–800–4–CANCER (1–800–422–6237)**
- Go to the NCI's Web site at **http://www.cancer.gov/publications**

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- Go to the NCI's Web site at **http://www.cancer.gov/espanol**

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U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES
National Institutes of Health
National Cancer Institute

About This Booklet

This National Cancer Institute (NCI) booklet is about *cancer** of the *esophagus*. Cancer that starts in this *organ* may also be called *esophageal cancer*. Each year in the United States, about 13,000 men and 3,500 women are told they have this disease.

Learning about medical care for esophageal cancer can help you take an active part in making choices about your care. This booklet tells about:

- Diagnosis and staging
- Treatment
- *Supportive care* and nutrition
- Taking part in research studies

This booklet has lists of questions that you may want to ask your doctor. Many people find it helpful to take a list of questions to a doctor visit. To help remember what your doctor says, you can take notes or ask whether you may use a tape recorder. You may also want to have a family member or friend go with you when you talk with the doctor—to take notes, ask questions, or just listen.

For the latest information about cancer of the esophagus, please visit our Web site at **http://www.cancer.gov/cancertopics/types/esophageal**. Or, contact our Cancer Information Service. We can answer your questions about cancer. We can also send you NCI booklets and fact sheets. Call **1–800–4–CANCER** (**1–800–422–6237**) or instant message us through the **LiveHelp** service at **http://www.cancer.gov/help**.

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*Words in *italics* are in the Dictionary on page 32. The Dictionary explains these terms. It also shows how to pronounce them.

The Esophagus

The esophagus is in the chest. It's about 10 inches long.

This organ is part of the *digestive tract*. Food moves from the mouth through the esophagus to the stomach.

The esophagus is a muscular tube. The wall of the esophagus has several layers:

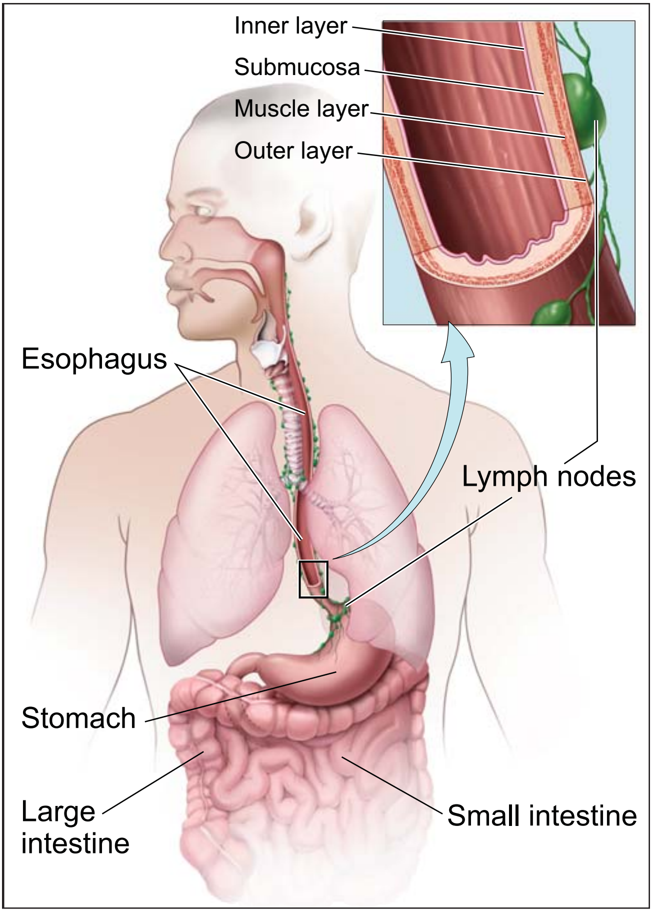
- **Inner layer or lining** (*mucosa*): The lining of the esophagus is moist so that food can pass to the stomach.
- ***Submucosa***: The glands in this layer make *mucus*. Mucus keeps the esophagus moist.
- **Muscle layer**: The muscles push the food down to the stomach.
- **Outer layer**: The outer layer covers the esophagus.

Cancer Cells

Cancer begins in *cells*, the building blocks that make up *tissues*. Tissues make up the organs of the body.

Normal cells grow and divide to form new cells as the body needs them. When normal cells grow old or get damaged, they die, and new cells take their place.

Sometimes, this process goes wrong. New cells form when the body doesn't need them, and old or damaged cells don't die as they should. The buildup of extra cells often forms a mass of tissue called a growth or *tumor*.



This picture shows the esophagus and nearby organs.

Growths in the wall of the esophagus can be *benign* (not cancer) or *malignant* (cancer). The smooth inner wall may have an abnormal rough area, an area of tiny bumps, or a tumor. Benign growths are not as harmful as malignant growths:

- **Benign growths**:
  - — are rarely a threat to life
  - — can be removed and probably won't grow back
  - — don't invade the tissues around them
  - — don't spread to other parts of the body
- **Malignant growths**:
  - — may be a threat to life
  - — sometimes can be removed but can grow back
  - — can invade and damage nearby tissues and organs
  - — can spread to other parts of the body

Esophageal cancer begins in cells in the inner layer of the esophagus. Over time, the cancer may invade more deeply into the esophagus and nearby tissues.

Cancer cells can spread by breaking away from the original tumor. They may enter blood vessels or *lymph vessels*, which branch into all the tissues of the body. The cancer cells may attach to other tissues and grow to form new tumors that may damage those tissues. The spread of cancer cells is called *metastasis*. See the Staging section on page 9 for information about esophageal cancer that has spread.

Types of Esophageal Cancer

There are two main types of esophageal cancer. Both types are diagnosed, treated, and managed in similar ways.

The two most common types are named for how the cancer cells look under a microscope. Both types begin in cells in the inner lining of the esophagus:

- ***Adenocarcinoma* of the esophagus**: This type is usually found in the lower part of the esophagus, near the stomach. In the United States, adenocarcinoma is the most common type of esophageal cancer. It's been increasing since the 1970s.
- ***Squamous cell carcinoma* of the esophagus**: This type is usually found in the upper part of the esophagus. This type is becoming less common among Americans. Around the world, however, squamous cell carcinoma is the most common type.

Risk Factors

When you get a diagnosis of cancer, it's natural to wonder what may have caused the disease. Doctors can seldom explain why one person develops esophageal cancer and another doesn't. However, we do know that people with certain *risk factors* are more likely than others to develop esophageal cancer. A risk factor is something that may increase the chance of getting a disease.

Studies have found the following risk factors for esophageal cancer:

- **Age 65 or older**: Age is the main risk factor for esophageal cancer. The chance of getting this disease goes up as you get older. In the United States, most people are 65 years of age or older when they are diagnosed with esophageal cancer.
- **Being male**: In the United States, men are more than three times as likely as women to develop esophageal cancer.
- **Smoking**: People who smoke are more likely than people who don't smoke to develop esophageal cancer.
- **Heavy drinking**: People who have more than 3 alcoholic drinks each day are more likely than people who don't drink to develop squamous cell carcinoma of the esophagus. Heavy drinkers who smoke are at a much higher risk than heavy drinkers who don't smoke. In other words, these two factors act together to increase the risk even more.
- **Diet**: Studies suggest that having a diet that's low in fruits and vegetables may increase the risk of esophageal cancer. However, results from diet studies don't always agree, and more research is needed to better understand how diet affects the risk of developing esophageal cancer.
- **Obesity**: Being obese increases the risk of adenocarcinoma of the esophagus.
- **Acid *reflux***: Acid reflux is the abnormal backward flow of stomach acid into the esophagus. Reflux is very common. A symptom of reflux is heartburn, but some people don't have symptoms. The stomach acid can damage the tissue of the esophagus. After many years of reflux, this tissue damage may lead to adenocarcinoma of the esophagus in some people.

- ***Barrett esophagus***: Acid reflux may damage the esophagus and over time cause a condition known as Barrett esophagus. The cells in the lower part of the esophagus are abnormal. Most people who have Barrett esophagus don’t know it. The presence of Barrett esophagus increases the risk of adenocarcinoma of the esophagus. It’s a greater risk factor than acid reflux alone.

Many other possible risk factors (such as smokeless tobacco) have been studied. Researchers continue to study these possible risk factors.

Having a risk factor doesn’t mean that a person will develop cancer of the esophagus. Most people who have risk factors never develop esophageal cancer.

Symptoms

Early esophageal cancer may not cause symptoms. As the cancer grows, the most common symptoms are:

- Food gets stuck in the esophagus, and food may come back up
- Pain when swallowing
- Pain in the chest or back
- Weight loss
- Heartburn
- A hoarse voice or cough that doesn’t go away within 2 weeks

These symptoms may be caused by esophageal cancer or other health problems. If you have any of these symptoms, you should tell your doctor so that problems can be diagnosed and treated as early as possible.

Diagnosis

If you have a symptom that suggests esophageal cancer, your doctor must find out whether it's really due to cancer or to some other cause. The doctor gives you a physical exam and asks about your personal and family health history. You may have blood tests. You also may have:

- ***Barium swallow***: After you drink a *barium solution*, you have *x-rays* taken of your esophagus and stomach. The barium solution makes your esophagus show up more clearly on the x-rays. This test is also called an *upper GI series*.
- ***Endoscopy***: The doctor uses a thin, lighted tube (*endoscope*) to look down your esophagus. The doctor first numbs your throat with an *anesthetic* spray, and you may also receive medicine to help you relax. The tube is passed through your mouth or nose to the esophagus. The doctor may also call this procedure upper endoscopy, EGD, or *esophagoscopy*.
- ***Biopsy***: Usually, cancer begins in the inner layer of the esophagus. The doctor uses an endoscope to remove tissue from the esophagus. A *pathologist* checks the tissue under a microscope for cancer cells. A biopsy is the only sure way to know if cancer cells are present.

You may want to ask the doctor these questions before having a biopsy:

- Where will the procedure take place? Will I have to go to the hospital?
- How long will it take? Will I be awake?
- Will it hurt? Will I get an anesthetic?
- What are the risks? What are the chances of infection or bleeding afterward?
- How do I prepare for the procedure?
- How long will it take me to recover?
- How soon will I know the results? Will I get a copy of the pathology report?
- If I do have cancer, who will talk to me about the next steps? When?

Staging

If the biopsy shows that you have cancer, your doctor needs to learn the stage (extent) of the disease to help you choose the best treatment.

Staging is a careful attempt to find out the following:

- how deeply the cancer invades the wall of the esophagus
- whether the cancer invades nearby tissues
- whether the cancer has spread, and if so, to what parts of the body

When esophageal cancer spreads, it's often found in nearby *lymph nodes*. If cancer has reached these nodes, it may also have spread to other lymph nodes, the bones, or other organs. Also, esophageal cancer may spread to the liver and lungs.

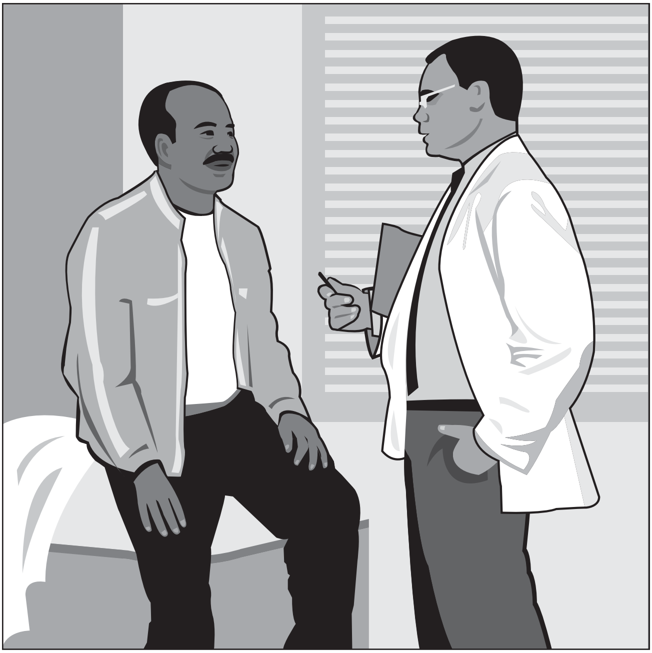
Your doctor may order one or more of the following staging tests:

- ***Endoscopic ultrasound***: The doctor passes a thin, lighted tube (endoscope) down your throat, which has been numbed with anesthetic. A probe at the end of the tube sends out sound waves that you can't hear. The waves bounce off tissues in your esophagus and nearby organs. A computer creates a picture from the echoes. The picture can show how deeply the cancer has invaded the wall of the esophagus. The doctor may use a needle to take tissue samples of lymph nodes.
- ***CT scan***: An x-ray machine linked to a computer takes a series of detailed pictures of your chest and *abdomen*. Doctors use CT scans to look for esophageal cancer that has spread to lymph nodes and other areas. You may receive *contrast material* by mouth or by *injection* into a blood vessel. The contrast material makes abnormal areas easier to see.
- ***MRI***: A strong magnet linked to a computer is used to make detailed pictures of areas inside your body. An MRI can show whether cancer has spread to lymph nodes or other areas. Sometimes contrast material is given by injection into your blood vessel. The contrast material makes abnormal areas show up more clearly on the picture.

- ***PET scan***: You receive an injection of a small amount of *radioactive* sugar. The radioactive sugar gives off signals that the PET scanner picks up. The PET scanner makes a picture of the places in your body where the sugar is being taken up. Cancer cells show up brighter in the picture because they take up sugar faster than normal cells do. A PET scan shows whether esophageal cancer may have spread.
- ***Bone scan***: You get an injection of a small amount of a radioactive substance. It travels through the bloodstream and collects in the bones. A machine called a scanner detects and measures the *radiation*. The scanner makes pictures of the bones. The pictures may show cancer that has spread to the bones.
- ***Laparoscopy***: After you are given *general anesthesia*, the *surgeon* makes small *incisions* (cuts) in your abdomen. The surgeon inserts a thin, lighted tube (*laparoscope*) into the abdomen. Lymph nodes or other tissue samples may be removed to check for cancer cells.

Sometimes staging is not complete until after surgery to remove the cancer and nearby lymph nodes.

When cancer spreads from its original place to another part of the body, the new tumor has the same kind of abnormal cells and the same name as the primary tumor. For example, if esophageal cancer spreads to the liver, the cancer cells in the liver are actually esophageal cancer cells. The disease is metastatic esophageal cancer, not liver cancer. For that reason, it’s treated as esophageal cancer, not liver cancer. Doctors call the new tumor “distant” or metastatic disease.



These are the stages of esophageal cancer:

- **Stage 0**: Abnormal cells are found only in the inner layer of the esophagus. It’s called *carcinoma in situ*.
- **Stage I**: The cancer has grown through the inner layer to the submucosa. (The picture on page 3 shows the submucosa and other layers.)
- **Stage II** is one of the following:
  - — The cancer has grown through the inner layer to the submucosa, and cancer cells have spread to lymph nodes.
  - — Or, the cancer has invaded the muscle layer. Cancer cells may be found in lymph nodes.
  - — Or, the cancer has grown through the outer layer of the esophagus.

- **Stage III** is one of the following:
  - — The cancer has grown through the outer layer, and cancer cells have spread to lymph nodes.
  - — Or, the cancer has invaded nearby structures, such as the airways. Cancer cells may have spread to lymph nodes.
- **Stage IV**: Cancer cells have spread to distant organs, such as the liver.

Treatment

People with esophageal cancer have several treatment options. The options are *surgery, radiation therapy, chemotherapy*, or a combination of these treatments. For example, radiation therapy and chemotherapy may be given before or after surgery.

The treatment that's right for you depends mainly on the following:

- where the cancer is located within the esophagus
- whether the cancer has invaded nearby structures
- whether the cancer has spread to lymph nodes or other organs
- your symptoms
- your general health

Esophageal cancer is hard to control with current treatments. For that reason, many doctors encourage people with this disease to consider taking part in a *clinical trial*, a research study of new treatment methods. Clinical trials are an important option for people with all stages of esophageal cancer. See the Taking Part in Cancer Research section on page 30.

You may have a team of specialists to help plan your treatment. Your doctor may refer you to specialists, or you may ask for a referral. You may want to see a *gastroenterologist*, a doctor who specializes in treating problems of the digestive organs. Other specialists who treat esophageal cancer include *thoracic* (chest) *surgeons*, *thoracic surgical oncologists*, *medical oncologists*, and *radiation oncologists*. Your health care team may also include an *oncology nurse* and a *registered dietitian*. If your airways are affected by the cancer, you may have a *respiratory therapist* as part of your team. If you have trouble swallowing, you may see a *speech pathologist*.

Your health care team can describe your treatment choices, the expected results of each, and the possible *side effects*. Because cancer therapy often damages healthy cells and tissues, side effects are common. Before treatment starts, ask your health care team about possible side effects and how treatment may change your normal activities. You and your health care team can work together to develop a treatment plan that meets your needs.

You may want to ask your doctor these questions before your treatment begins:

- What is the stage of the disease? Has the cancer spread? Do any lymph nodes show signs of cancer?
- What is the goal of treatment? What are my treatment choices? Which do you recommend for me? Why?
- Will I have more than one kind of treatment?
- What are the expected benefits of each type of treatment?
- What can I do to prepare for treatment?
- Will I need to stay in the hospital? If so, for how long?
- What are the risks and possible side effects of each treatment? For example, am I likely to have eating problems during or after treatment? How can side effects be managed?
- What will the treatment cost? Will my insurance cover it?
- Would a research study (clinical trial) be appropriate for me?
- Can you recommend other doctors who could give me a second opinion about my treatment options?
- How often should I have checkups?

Surgery

There are several types of surgery for esophageal cancer. The type depends mainly on where the cancer is located. The surgeon may remove the whole esophagus or only the part that has the cancer. Usually, the surgeon removes the section of the esophagus with the cancer, lymph nodes, and nearby soft tissues. Part or all of the stomach may also be removed. You and your surgeon can talk about the types of surgery and which may be right for you.

The surgeon makes incisions into your chest and abdomen to remove the cancer. In most cases, the surgeon pulls up the stomach and joins it to the remaining part of the esophagus. Or a piece of intestine may be used to connect the stomach to the remaining part of the esophagus. The surgeon may use either a piece of small intestine or large intestine. If the stomach was removed, a piece of intestine is used to join the remaining part of the esophagus to the small intestine.

During surgery, the surgeon may place a feeding tube into your small intestine. This tube helps you get enough nutrition while you heal. Information about eating after surgery is in the Nutrition section on page 26.

You may have pain for the first few days after surgery. However, medicine will help control the pain. Before surgery, you should discuss the plan for pain relief with your health care team. After surgery, your team can adjust the plan if you need more relief.

Your health care team will watch for signs of food leaking from the newly joined parts of your digestive tract. They will also watch for pneumonia or other infections, breathing problems, bleeding, or other problems that may require treatment.

The time it takes to heal after surgery is different for everyone and depends on the type of surgery. You may be in the hospital for at least one week.

You may want to ask your doctor these questions about surgery:

- Do you suggest surgery for me? If so, which type?
- Will you remove lymph nodes and other tissue? Will you remove part or all of the stomach? Why?
- What are the risks of surgery?
- How will I feel after surgery?
- How will pain be controlled after surgery?
- How long will I be in the hospital?
- Am I likely to have eating problems? Will I need a special diet?
- Will I need a feeding tube? If so, for how long? How do I take care of it? Who can help me if I have a problem?
- Will I have any lasting side effects?

Radiation Therapy

Radiation therapy (also called radiotherapy) uses high-energy rays to kill cancer cells. It affects cells only in the treated area.

Radiation therapy may be used before or after surgery. Or it may be used instead of surgery. Radiation therapy is usually given with chemotherapy to treat esophageal cancer.

Doctors use two types of radiation therapy to treat esophageal cancer. Some people receive both types:

- ***External radiation therapy***: The radiation comes from a large machine outside the body. The machine aims radiation at your cancer. You may go to a hospital or clinic for treatment. Treatments are usually 5 days a week for several weeks.
- ***Internal radiation therapy*** (*brachytherapy*): The doctor numbs your throat with an anesthetic spray and gives you medicine to help you relax. The doctor puts a tube into your esophagus. The radiation comes from the tube. Once the tube is removed, no radioactivity is left in your body. Usually, only a single treatment is done.

Side effects depend mainly on the dose and type of radiation. External radiation therapy to the chest and abdomen may cause a sore throat, pain similar to heartburn, or pain in the stomach or the intestine. You may have nausea and diarrhea. Your health care team can give you medicines to prevent or control these problems.

Also, your skin in the treated area may become red, dry, and tender. You may lose hair in the treated area. A much less common side effect of radiation therapy aimed at the chest is harm to the lung, heart, or spinal cord.

You are likely to be very tired during radiation therapy, especially in the later weeks of external radiation therapy. You may also continue to feel very tired for a few weeks after radiation therapy is completed. Resting is important, but doctors usually advise patients to try to stay as active as they can.

Radiation therapy can lead to problems with swallowing. For example, sometimes radiation therapy can harm the esophagus and make it painful for you to swallow. Or, the radiation may cause the esophagus to narrow. Before radiation therapy, a plastic tube may be inserted into the esophagus to keep it open. If radiation therapy leads to a problem with swallowing, it may be hard to eat well. Ask your health care team for help getting good nutrition. See the Nutrition section on page 26 for more information.

You may find it helpful to read the NCI booklet *Radiation Therapy and You*.

You may want to ask your doctor these questions before having radiation therapy:

- Which type of radiation therapy can I consider? Are both types an option for me?
- When will treatment start? When will it end? How often will I have treatments?
- Will I need to stay in the hospital?
- What can I do to take care of myself before, during, and after treatment?
- How will I feel during treatment? Will I be able to drive myself to and from treatment?
- How will we know the treatment is working?
- How will I feel after the radiation therapy?
- Are there any lasting effects?

Chemotherapy

Most people with esophageal cancer get chemotherapy. Chemotherapy uses drugs to destroy cancer cells. The drugs for esophageal cancer are usually given through a vein (*intravenous*). You may have your treatment in a clinic, at the doctor's office, or at home. Some people need to stay in the hospital for treatment.

Chemotherapy is usually given in cycles. Each cycle has a treatment period followed by a rest period.

The side effects depend mainly on which drugs are given and how much. Chemotherapy kills fast-growing cancer cells, but the drug can also harm normal cells that divide rapidly:

- **Blood cells**: When chemotherapy lowers the levels of healthy blood cells, you're more likely to get infections, bruise or bleed easily, and feel very weak and tired. Your health care team will check for low levels of blood cells. If your levels are low, your health care team may stop the chemotherapy for a while or reduce the dose of drug. There also are medicines that can help your body make new blood cells.
- **Cells in hair roots**: Chemotherapy may cause hair loss. If you lose your hair, it will grow back, but it may change in color and texture.
- **Cells that line the digestive tract**: Chemotherapy can cause poor appetite, nausea and vomiting, diarrhea, or mouth and lip sores. Your health care team can give you medicines and suggest other ways to help with these problems.

Other possible side effects include a skin rash, joint pain, tingling or numbness in your hands and feet, hearing problems, or swollen feet or legs. Your health care team can suggest ways to control many of these problems. Most go away when treatment ends.

You may find it helpful to read NCI's booklet *Chemotherapy and You*.

You may want to ask your doctor these questions before having chemotherapy:

- Which drugs will I get?
- When will treatment start? When will it end? How often will I have treatments?
- Where will I go for treatment? Will I have to stay in the hospital?
- What can I do to take care of myself during treatment?
- How will we know the treatment is working?
- Will I have side effects during treatment? What side effects should I tell you about? Can I prevent or treat any of these side effects?
- Can these drugs cause side effects later on?

Second Opinion

Before starting treatment, you might want a second opinion about your diagnosis and treatment plan. You may want to find a medical center that has a lot of experience with treating esophageal cancer. You may even want to talk to several different doctors about all of the treatment options, their side effects, and the expected results.

Some people worry that the doctor will be offended if they ask for a second opinion. Usually the opposite is true. Most doctors welcome a second opinion. And many health insurance companies will pay for a second opinion if you or your doctor requests it.

If you get a second opinion, the second doctor may agree with your first doctor's diagnosis and treatment plan. Or the second doctor may suggest another approach. Either way, you have more information and perhaps a greater sense of control. You can feel more confident about the decisions you make, knowing that you've looked at your options.

It may take some time and effort to gather your medical records and see another doctor. In most cases, it's not a problem to take several weeks to get a second opinion. The delay in starting treatment usually will not make treatment less effective. To make sure, you should discuss this delay with your doctor.

There are many ways to find a doctor for a second opinion. You can ask your doctor, a local or state medical society, a nearby hospital, or a medical school for names of specialists. NCI's Cancer Information Service at 1–800–4–CANCER can tell you about nearby treatment centers. Other sources can be found in the NCI fact sheet *How To Find a Doctor or Treatment Facility If You Have Cancer*.

Supportive Care

Esophageal cancer and its treatment can lead to other health problems. You can have supportive care before, during, or after cancer treatment.

Supportive care is treatment to control pain and other symptoms, to relieve the side effects of therapy, and to help you cope with the feelings that a diagnosis of cancer can bring. You may receive supportive care to prevent or control these problems and to improve your comfort and quality of life during treatment.

You can get information about supportive care on NCI's Web site at **http://www.cancer.gov/cancerinfo/coping** and from NCI's Cancer Information Service at **1–800–4–CANCER** or **LiveHelp (http://www.cancer.gov/help)**.

Cancer Blocks the Esophagus

You may have trouble swallowing because the cancer blocks the esophagus. Not being able to swallow makes it hard or impossible to eat. It also increases the risk of food getting in your airways. This can lead to a lung infection like pneumonia. Also, not being able to swallow liquids or saliva can be very distressing.

Your health care team may suggest one or more of the following options:

- ***Stent***: You get an injection of a medicine to help you relax. The doctor places a stent (a tube made of metal mesh or plastic) in your esophagus. Food and liquid can pass through the center of the tube. However, solid foods need to be chewed well before swallowing. A large swallow of food could get stuck in the stent.
- ***Laser therapy***: A *laser* is a concentrated beam of intense light that kills tissue with heat. The doctor uses the laser to destroy the cancer cells blocking the esophagus. Laser therapy may make swallowing easier for a while, but you may need to repeat the treatment several weeks later.
- ***Photodynamic therapy***: You get an injection, and the drug collects in the esophageal cancer cells. Two days after the injection, the doctor uses an endoscope to shine a special light (such as a laser) on the cancer. The drug becomes active when exposed to light. Two or three days later, the doctor may check to see if the cancer cells have been killed. People getting this drug must avoid sunlight for one month or longer. Also, you may need to repeat the treatment several weeks later. You may want to read the NCI fact sheet *Photodynamic Therapy for Cancer: Questions and Answers*.

- **Radiation therapy**: Radiation therapy helps shrink the tumor. If the tumor blocks the esophagus, internal radiation therapy or sometimes external radiation therapy can be used to help make swallowing easier.
- **Balloon dilation**: The doctor inserts a tube through the blocked part of the esophagus. A balloon helps widen the opening. This method helps improve swallowing for a few days.
- **Other ways to get nutrition**: See the Nutrition section on page 26 for ways to get food when eating becomes difficult.

Pain

Cancer and its treatments may cause pain. It may be painful to swallow, or you may have pain in your chest from the cancer or from a stent. Your health care team or a pain control specialist can suggest ways to relieve or reduce pain. More information about pain control can be found in the NCI booklet *Pain Control*.

Sadness and Other Feelings

It's normal to feel sad, anxious, or confused after a diagnosis of a serious illness. Some people find it helpful to talk about their feelings. See the Sources of Support section on page 29.

Nutrition

It's important to meet your nutrition needs before, during, and after cancer treatment. You need the right amount of calories, protein, vitamins, and minerals. Getting the right nutrition can help you feel better and have more energy.

However, when you have esophageal cancer, it may be hard to eat for many reasons. You may be uncomfortable or tired, and you may not feel like eating. Also, the cancer may make it hard to swallow food. If you're getting chemotherapy, you may find that foods don't taste as good as they used to. You also may have side effects of treatment such as poor appetite, nausea, vomiting, or diarrhea.

If you develop problems with eating, there are a number of ways to meet your nutrition needs. A registered dietitian can help you figure out a way to get enough calories, protein, vitamins, and minerals:

- A dietitian may suggest a change in the types of foods you eat. Sometimes changing the texture, fiber, and fat content of your foods can lessen your discomfort. A dietitian may also suggest a change in the portion size and meal times.
- A dietitian may recommend liquid meals, such as canned nutrition beverages, milk shakes, or smoothies.
- If swallowing becomes too difficult, your dietitian and your doctor may recommend that you receive nutrition through a feeding tube.
- Sometimes, nutrition is provided directly into the bloodstream with intravenous nutrition.

You may want to read the NCI booklet *Eating Hints for Cancer Patients*. It contains many useful ideas and recipes.

Nutrition After Surgery

A registered dietitian can help you plan a diet that will meet your nutrition needs. A plan that describes the type and amount of food to eat after surgery can help you prevent weight loss and discomfort with eating.

If your stomach is removed during surgery, you may develop a problem afterward known as the *dumping syndrome*. This problem occurs when food or liquid enters the small intestine too fast. It can cause cramps, nausea, bloating, diarrhea, and dizziness. There are steps you can take to help control dumping syndrome:

- Eat smaller meals.
- Drink liquids before or after eating solid meals.
- Limit very sweet foods and drinks, such as cookies, candy, soda, and juices.

Also, your health care team may suggest medicine to control the symptoms.

After surgery, you may need to take daily supplements of vitamins and minerals, such as *calcium,* and you may need injections of *vitamin B12*.

You may want to ask a registered dietitian these questions about nutrition:

- How do I keep from losing too much weight? How do I know whether I'm getting enough calories and protein?
- What are some sample meals that would meet my needs?
- How can I include my favorite foods without causing or worsening digestive problems?
- Are there foods or drinks that I should avoid?
- What vitamins and minerals might I need to take?

Follow-up Care

You'll need checkups after treatment for esophageal cancer. Checkups help ensure that any changes in your health are noted and treated if needed. If you have any health problems between checkups, you should contact your doctor.

Checkups may include a physical exam, blood tests, chest x-ray, CT scans, endoscopy, or other tests.

The NCI has publications to help answer questions about follow-up care and other concerns. You may find it helpful to read the NCI booklet *Facing Forward: Life After Cancer Treatment*. You may also want to read the NCI fact sheet *Follow-up Care After Cancer Treatment: Questions and Answers*.

You may want to ask your doctor these questions after you have finished treatment:

- How often will I need checkups?
- Which follow-up tests do you suggest for me?
- Between checkups, what health problems or symptoms should I tell you about?

Sources of Support

Learning you have esophageal cancer can change your life and the lives of those close to you. These changes can be hard to handle. It's normal for you, your family, and your friends to need help coping with the feelings that a diagnosis of cancer can bring.

Concerns about treatments and managing side effects, hospital stays, and medical bills are common. You may also worry about caring for your family, keeping your job, or continuing daily activities.

Here's where you can go for support:

- Doctors, nurses, and other members of your health care team can answer questions about treatment, working, or other activities.

- Social workers, counselors, or members of the clergy can be helpful if you want to talk about your feelings or concerns. Often, social workers can suggest resources for financial aid, transportation, home care, or emotional support.
- Support groups also can help. In these groups, patients or their family members meet with other patients or their families to share what they have learned about coping with the disease and the effects of treatment. Groups may offer support in person, over the telephone, or on the Internet. You may want to talk with a member of your health care team about finding a support group.
- Information specialists at **1–800–4–CANCER** and at **LiveHelp** (**http://www.cancer.gov/help**) can help you locate programs, services, and publications. They can send you a list of organizations that offer services to people with cancer.

For tips on coping, you may want to read the NCI booklet *Taking Time: Support for People With Cancer.*

Taking Part in Cancer Research

Doctors all over the country are conducting many types of clinical trials (research studies in which people volunteer to take part). Clinical trials are designed to answer important questions and to find out whether new approaches are safe and effective.

Research already has led to advances that have helped people live longer, and research continues. Doctors are trying to find better ways to care for people with esophageal cancer:

- **Surgery**: Surgeons are studying whether small cuts can be used instead of long incisions. The surgeon makes small cuts in the neck, chest, and abdomen. The surgeon sees inside the chest with a *laparoscope*, and the cancer-containing esophagus is removed.
- **Chemotherapy and *biological therapy***: NCI is sponsoring a study of biological therapy (a *monoclonal antibody*) combined with chemotherapy.
- **Supportive care**: Doctors are also testing ways to manage the problems caused by cancer and its treatment.

Even if the people in a trial do not benefit directly, they may still make an important contribution by helping doctors learn more about cancer and how to control it. Although clinical trials may pose some risks, doctors do all they can to protect their patients.

If you're interested in being part of a clinical trial, talk with your doctor. You may want to read the NCI booklet *Taking Part in Cancer Treatment Research Studies*. It describes how treatment studies are carried out and explains their possible benefits and risks.

NCI's Web site includes a section on clinical trials at **http://www.cancer.gov/clinicaltrials**. It has general information about clinical trials as well as detailed information about specific ongoing studies of cancer. NCI's Information Specialists at **1–800–4–CANCER** or at **LiveHelp** at **http://www.cancer.gov/help** can answer questions and provide information about clinical trials.

Dictionary

Definitions of thousands of terms are on the NCI Web site in the NCI Dictionary of Cancer Terms. You can access it at **http://www.cancer.gov/dictionary**.

Abdomen (AB-doh-men): The area of the body that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs.

Adenocarcinoma (A-den-oh-KAR-sih-NOH-muh): Cancer that begins in cells that line certain internal organs and that have gland-like (secretory) properties.

Anesthetic (a-nes-THEH-tik): A substance that causes loss of feeling or awareness. Local anesthetics cause loss of feeling in a part of the body. General anesthetics put the person to sleep.

Barium solution: A liquid containing barium sulfate that is used in x-rays to highlight parts of the digestive system.

Barium swallow: A series of x-rays of the esophagus. The x-ray pictures are taken after the person drinks a solution that contains barium. The barium coats and outlines the esophagus on the x-ray. Also called esophagram and upper GI series.

Barrett esophagus (BA-ret ee-SAH-fuh-gus): A condition in which the cells lining the lower part of the esophagus have changed or been replaced with abnormal cells that could lead to cancer of the esophagus. The backing up of stomach contents (reflux) may irritate the esophagus and, over time, cause Barrett esophagus.

Benign (beh-NINE): Not cancerous. Benign tumors may grow larger but do not spread to other parts of the body.

Biological therapy (BY-oh-LAH-jih-kul THAYR-uh-pee): Treatment to boost or restore the ability of the immune system to fight cancer, infections, and other diseases. Also used to lessen certain side effects that may be caused by some cancer treatments. Agents used in biological therapy include monoclonal antibodies, growth factors, and vaccines. These agents may also have a direct antitumor effect. Also called immunotherapy, biotherapy, biological response modifier therapy, and BRM therapy.

Biopsy (BY-op-see): The removal of cells or tissues for examination by a pathologist. The pathologist may study the tissue under a microscope or perform other tests on the cells or tissue. There are many different types of biopsy procedures. The most common types include: (1) incisional biopsy, in which only a sample of tissue is removed; (2) excisional biopsy, in which an entire lump or suspicious area is removed; and (3) needle biopsy, in which a sample of tissue or fluid is removed with a needle. When a wide needle is used, the procedure is called a core biopsy. When a thin needle is used, the procedure is called a fine-needle aspiration biopsy.

Bone scan: A technique to create images of bones on a computer screen or on film. A small amount of radioactive material is injected into a blood vessel and travels through the bloodstream; it collects in the bones and is detected by a scanner.

Brachytherapy (BRAY-kee-THAYR-uh-pee): A type of radiation therapy in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called radiation brachytherapy, internal radiation therapy, and implant radiation therapy.

Calcium (KAL-see-um): A mineral found in teeth, bones, and other body tissues.

Cancer (KAN-ser): A term for diseases in which abnormal cells divide without control. Cancer cells can invade nearby tissues and can spread to other parts of the body through the blood and lymph systems.

Carcinoma in situ (KAR-sih-NOH-muh in SY-too): A group of abnormal cells that remain in the tissue in which they first formed. These abnormal cells may become cancer and spread into nearby normal tissue.

Cell: The individual unit that makes up the tissues of the body. All living things are made up of one or more cells.

Chemotherapy (KEE-moh-THAYR-uh-pee): Treatment with drugs that kill cancer cells.

Clinical trial: A type of research study that tests how well new medical approaches work in people. These studies test new methods of screening, prevention, diagnosis, or treatment of a disease. Also called a clinical study.

Contrast material: A dye or other substance that helps to show abnormal areas inside the body. It is given by injection into a vein, by enema, or by mouth. Contrast material may be used with x-rays, CT scans, MRI, or other imaging tests.

CT scan: Computed tomography scan (kum-PYOO-ted tuh-MAH-gruh-fee skan). A series of detailed pictures of areas inside the body taken from different angles; the pictures are created by a computer linked to an x-ray machine. Also called computerized tomography and computerized axial tomography (CAT) scan.

Digestive tract (dy-JES-tiv): The organs through which food and liquids pass when they are swallowed, digested, and eliminated. These organs are the mouth, esophagus, stomach, small and large intestines, and rectum and anus.

Dumping syndrome: A condition that occurs when food or liquid moves too fast into the small intestine. Symptoms include cramps, nausea, diarrhea, sweating, weakness, and dizziness. Dumping syndrome sometimes occurs in people who have had part or all of their stomach removed.

Endoscope (EN-doh-SKOPE): A thin, tube-like instrument used to look at tissues inside the body. An endoscope has a light and a lens for viewing and may have a tool to remove tissue.

Endoscopic ultrasound (en-doh-SKAH-pik UL-truh-SOWND): EUS. A procedure in which an endoscope is inserted into the body. An endoscope is a thin, tube-like instrument that has a light and a lens for viewing. A probe at the end of the endoscope is used to bounce high-energy sound waves (ultrasound) off internal organs to make a picture (sonogram). Also called endosonography.

Endoscopy (en-DOSS-koh-pee): A procedure that uses an endoscope to examine the inside of the body. An endoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

Esophageal cancer (ee-SAH-fuh-JEE-ul KAN-ser): Cancer that forms in tissues lining the esophagus (the muscular tube through which food passes from the throat to the stomach). Two types of esophageal cancer are squamous cell carcinoma (cancer that begins in flat cells lining the esophagus) and adenocarcinoma (cancer that begins in cells that make and release mucus and other fluids).

Esophagoscopy (ee-SAH-fuh-GOS-koh-pee): Examination of the esophagus using an esophagoscope. An esophagoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

Esophagus (ee-SAH-fuh-gus): The muscular tube through which food passes from the throat to the stomach.

External radiation therapy (RAY-dee-AY-shun THAYR-uh-pee): A type of radiation therapy that uses a machine to aim high-energy rays at the cancer from outside of the body. Also called external beam radiation therapy.

Gastroenterologist (GAS-troh-EN-teh-RAH-loh-jist): A doctor who specializes in diagnosing and treating disorders of the digestive system.

General anesthesia (A-nes-THEE-zhuh): Drugs that cause loss of feeling or awareness and put the person to sleep.

Incision (in-SIH-zhun): A cut made in the body to perform surgery.

Injection: Use of a syringe and needle to push fluids or drugs into the body; often called a “shot.”

Internal radiation therapy (in-TER-nul RAY-dee-AY-shun THAYR-uh-pee): A type of radiation therapy in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called brachytherapy, radiation brachytherapy, and implant radiation therapy.

Intravenous (IN-truh-VEE-nus): IV. Into or within a vein. Intravenous usually refers to a way of giving a drug or other substance through a needle or tube inserted into a vein.

Laparoscope (LA-puh-ruh-SKOPE): A thin, tube-like instrument used to look at tissues and organs inside the abdomen. A laparoscope has a light and a lens for viewing and may have a tool to remove tissue.

Laparoscopy (LA-puh-ROS-koh-pee): A procedure that uses a laparoscope, inserted through the abdominal wall, to examine the inside of the abdomen. A laparoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

Laser (LAY-zer): A device that concentrates light into an intense, narrow beam used to cut or destroy tissue. It is used in microsurgery, photodynamic therapy, and for a variety of diagnostic purposes.

Laser therapy (LAY-zer THAYR-uh-pee): The use of an intensely powerful beam of light to kill cancer cells.

Lymph node (limf node): A rounded mass of lymphatic tissue that is surrounded by a capsule of connective tissue. Lymph nodes filter lymph (lymphatic fluid), and they store lymphocytes (white blood cells). They are located along lymphatic vessels. Also called a lymph gland.

Lymph vessel (limf): A thin tube that carries lymph (lymphatic fluid) and white blood cells through the lymphatic system. Also called lymphatic vessel.

Malignant (muh-LIG-nunt): Cancerous. Malignant tumors can invade and destroy nearby tissue and spread to other parts of the body.

Medical oncologist (MEH-dih-kul on-KAH-loh-jist): A doctor who specializes in diagnosing and treating cancer using chemotherapy, hormonal therapy, and biological therapy. A medical oncologist often is the main health care provider for someone who has cancer. A medical oncologist also gives supportive care and may coordinate treatment given by other specialists.

Metastasis (meh-TAS-tuh-sis): The spread of cancer from one part of the body to another. A tumor formed by cells that have spread is called a "metastatic tumor" or a "metastasis." The metastatic tumor contains cells that are like those in the original (primary) tumor. The plural form of metastasis is metastases (meh-TAS-tuh-seez).

Monoclonal antibody (MAH-noh-KLOH-nul AN-tih-BAH-dee): A type of protein made in the laboratory that can locate and bind to substances in the body, including tumor cells. There are many kinds of monoclonal antibodies. Each monoclonal antibody is made to find one substance. Monoclonal antibodies are being used to treat some types of cancer and are being studied in the treatment of other types. They can be used alone or to carry drugs, toxins, or radioactive materials directly to a tumor.

MRI: Magnetic resonance imaging (mag-NEH-tik REH-zuh-nunts IH-muh-jing). A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue. MRI makes better images of organs and soft tissue than other scanning techniques, such as computed tomography (CT) or x-ray. MRI is especially useful for imaging the brain, the spine, the soft tissue of joints, and the inside of bones. Also called nuclear magnetic resonance imaging (NMRI).

Mucosa (myoo-KOH-suh): The moist, inner lining of some organs and body cavities (such as the nose, mouth, esophagus, lungs, and stomach). Glands in the mucosa make mucus (a thick, slippery fluid). Also called mucous membrane.

Mucus (MYOO-kus): A thick, slippery fluid produced by the membranes that line certain organs of the body, including the nose, mouth, throat, and vagina.

Oncology nurse (on-KAH-loh-jee): A nurse who specializes in treating and caring for people who have cancer.

Organ: A part of the body that performs a specific function. For example, the heart is an organ.

Pathologist (puh-THAH-loh-jist): A doctor who identifies diseases by studying cells and tissues under a microscope.

PET scan: Positron emission tomography (PAH-zih-tron ee-MIH-shun toh-MAH-gruh-fee) scan. A procedure in which a small amount of radioactive glucose (sugar) is injected into a vein, and a scanner is used to make detailed, computerized pictures of areas inside the body where the glucose is used. Because cancer cells often use more glucose than normal cells, the pictures can be used to find cancer cells in the body.

Photodynamic therapy (FOH-toh-dy-NA-mik THAYR-uh-pee): Treatment with drugs that become active when exposed to light. These activated drugs may kill cancer cells.

Radiation (RAY-dee-AY-shun): Energy released in the form of particles or electromagnetic waves. Common sources of radiation include radon gas, cosmic rays from outer space, and medical x-rays.

Radiation oncologist (RAY-dee-AY-shun on-KAH-loh-jist): A doctor who specializes in using radiation to treat cancer.

Radiation therapy (RAY-dee-AY-shun THAYR-uh-pee): The use of high-energy radiation from x-rays, gamma rays, neutrons, protons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy). Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that travels in the blood to tissues throughout the body. Also called radiotherapy and irradiation.

Radioactive (RAY-dee-oh-AK-tiv): Giving off radiation.

Reflux: The backward flow of liquid from the stomach into the esophagus.

Registered dietitian (dy-eh-TIH-shun): A health professional with special training in the use of diet and nutrition to keep the body healthy. A registered dietitian may help the medical team improve the nutritional health of a patient.

Respiratory therapist (RES-pih-ruh-TOR-ee THAYR-uh-pist): A health professional trained to evaluate and treat people who have breathing problems or other lung disorders.

Risk factor: Something that may increase the chance of developing a disease. Some examples of risk factors for cancer include age, a family history of certain cancers, use of tobacco products, certain eating habits, obesity, lack of exercise, exposure to radiation or other cancer-causing agents, and certain genetic changes.

Side effect: A problem that occurs when treatment affects healthy tissues or organs. Some common side effects of cancer treatment are fatigue, pain, nausea, vomiting, decreased blood cell counts, hair loss, and mouth sores.

Speech pathologist (puh-THAH-loh-jist): A specialist who evaluates and treats people with communication and swallowing problems. Also called a speech therapist.

Squamous cell carcinoma (SKWAY-mus sel KAR-sih-NOH-muh): Cancer that begins in squamous cells, which are thin, flat cells that look like fish scales. Squamous cells are found in the tissue that forms the surface of the skin, the lining of the hollow organs of the body, and the passages of the respiratory and digestive tracts. Also called epidermoid carcinoma.

Stent: A device placed in a body structure (such as a blood vessel or the gastrointestinal tract) to keep the structure open.

Submucosa (sub-myoo-KOH-suh): The layer of tissue under the mucosa (inner lining of some organs and body cavities that makes mucus).

Supportive care: Care given to improve the quality of life of patients who have a serious or life-threatening disease. The goal of supportive care is to prevent or treat as early as possible the symptoms of the disease, side effects caused by treatment of the disease, and psychological, social, and spiritual problems related to the disease or its treatment. Also called palliative care, comfort care, and symptom management.

Surgeon: A doctor who removes or repairs a part of the body by operating on the patient.

Surgery (SER-juh-ree): A procedure to remove or repair a part of the body or to find out whether disease is present. An operation.

Thoracic surgeon (thoh-RAH-sik SER-jun): A surgeon who specializes in operating on organs inside the chest, including the heart and lungs.

Thoracic surgical oncologist (thoh-RAH-sik SER-jih-kul on-KAH-loh-jist): A surgeon who specializes in operating on tumors found inside the chest.

Tissue (TISH-oo): A group or layer of cells that work together to perform a specific function.

Tumor (TOO-mer): An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Tumors may be benign (not cancerous), or malignant (cancerous). Also called neoplasm.

Upper GI series: A series of x-rays of the esophagus. The x-ray pictures are taken after the person drinks a solution that contains barium. The barium coats and outlines the esophagus on the x-ray. Also called esophagram and barium swallow.

Vitamin B12 (VY-tuh-min): A vitamin that is needed to make red blood cells and DNA (the genetic material in cells) and to keep nerve cells healthy. It is found in eggs, meat, poultry, shellfish, milk, and milk products. Vitamin B12, along with folate, may be given to help reduce side effects in cancer patients being treated with drugs called antimetabolites. Also called cobalamin.

X-ray: A type of high-energy radiation. In low doses, x-rays are used to diagnose diseases by making pictures of the inside of the body. In high doses, x-rays are used to treat cancer.

National Cancer Institute Information Resources

You may want more information for yourself, your family, and your doctor. The following NCI services are available to help you.

Telephone

NCI's Cancer Information Service (CIS) provides accurate, up-to-date information about cancer to patients and their families, health professionals, and the general public. Information specialists translate the latest scientific information into plain language, and they will respond in English or Spanish, as well as through TRS providers for the hearing or speech impaired. Calls to the CIS are confidential and free.

Telephone: **1–800–4–CANCER** (1–800–422–6237)

Internet

NCI's Web site provides information from numerous NCI sources. It offers current information about cancer prevention, screening, diagnosis, treatment, genetics, supportive care, and ongoing clinical trials. It has information about NCI's research programs, funding opportunities, and cancer statistics.

Web site: **http://www.cancer.gov**

Spanish Web site: **http://www.cancer.gov/espanol**

If you're unable to find what you need on the Web site, contact NCI staff. Use the online contact form at **http://www.cancer.gov/contact** or send an email to **cancergovstaff@mail.nih.gov**.

Also, information specialists provide live, online assistance through **LiveHelp** at **http://www.cancer.gov/help**.

National Cancer Institute Publications

NCI provides publications about cancer, including the booklets and fact sheets mentioned in this booklet. Many are available in both English and Spanish.

You may order these publications by telephone, on the Internet, or by mail. You may also read them online and print your own copy.

- **By telephone**: People in the United States and its territories may order these and other NCI publications by calling the NCI's Cancer Information Service at **1–800–4–CANCER**.
- **On the Internet**: Many NCI publications may be viewed, downloaded, and ordered from **http://www.cancer.gov/publications** on the Internet. People in the United States and its territories may use this Web site to order printed copies. This Web site also explains how people outside the United States can mail or fax their requests for NCI booklets.
- **By mail**: NCI publications may be ordered by writing to the address below:

  Publications Ordering Service
  National Cancer Institute
  P.O. Box 24128
  Baltimore, MD 21227

Clinical Trials

- *Taking Part in Cancer Treatment Research Studies*

Finding a Doctor, Support Groups, or Other Organizations

- *How To Find a Doctor or Treatment Facility If You Have Cancer* (also in Spanish)
- *Cancer Support Groups: Questions and Answers*
- *National Organizations That Offer Services to People With Cancer and Their Families* (also in Spanish)

Cancer Treatment and Supportive Care

- *Radiation Therapy and You* (also in Spanish)
- *Understanding Radiation Therapy: What To Know About External Beam Radiation Therapy* (also in Spanish)
- *Understanding Radiation Therapy: What To Know About Brachytherapy (A Type of Internal Radiation Therapy)* (also in Spanish)
- *Chemotherapy and You* (also in Spanish)
- *Photodynamic Therapy for Cancer: Questions and Answers*
- *Eating Hints for Cancer Patients* (also in Spanish)
- *Pain Control* (also in Spanish)

Coping with Cancer

- *Taking Time*: *Support for People with Cancer*
- *Managing Radiation Therapy Side Effects: What To Do When You Feel Weak or Tired (Fatigue)* (also in Spanish)

Life After Cancer Treatment

- *Facing Forward*: *Life After Cancer Treatment* (also in Spanish)
- *Follow-up Care After Cancer Treatment: Questions and Answers*
- *Facing Forward*: *Ways You Can Make a Difference in Cancer*

Advanced or Recurrent Cancer

- *Coping With Advanced Cancer*
- *When Cancer Returns*

Complementary Medicine

- *Thinking about Complementary & Alternative Medicine: A guide for people with cancer*
- *Complementary and Alternative Medicine in Cancer Treatment: Questions and Answers* (also in Spanish)

Caregivers

- *When Someone You Love Is Being Treated for Cancer: Support for Caregivers*
- *When Someone You Love Has Advanced Cancer: Support for Caregivers*
- *Facing Forward: When Someone You Love Has Completed Cancer Treatment*
- *Caring for the Caregiver: Support for Cancer Caregivers*

The National Cancer Institute

The National Cancer Institute (NCI), part of the National Institutes of Health, is the Federal Government's principal agency for cancer research and training. NCI conducts and supports basic and clinical research to find better ways to prevent, diagnose, and treat cancer. The Institute also supports education and training for cancer research and treatment programs. In addition, NCI is responsible for communicating its research findings to the medical community and the public.

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NATIONAL INSTITUTES OF HEALTH

NATIONAL CANCER INSTITUTE®

NIH Publication No. 08-1557
Revised September 2008
Printed September 2008

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