National Cancer Institute

What You Need To Know Index

What You Need To Know About™

Stomach Cancer

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

This booklet is about stomach cancer. The Cancer Information Service can help you learn more about this disease. The staff can talk with you in English or Spanish.

The number is **1–800–4–CANCER** (1–800–422–6237). The number for callers with TTY equipment is 1–800–332–8615. Your call is free.

Este folleto es acerca del cáncer de estómago. Llame al Servicio de Información sobre el Cáncer para saber más sobre esta enfermedad. Este servicio tiene personal que habla español.

El número a llamar es el **1–800–4–CANCER** (1–800–422–6237). Personas con equipo TTY pueden llamar al 1–800–332–8615. Su llamada es gratis.

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What You Need To Know About™ Stomach Cancer

This National Cancer Institute (NCI) booklet has important information about *cancer** of the stomach. Stomach cancer is also called gastric cancer.

You will read about possible causes, symptoms, diagnosis, and treatment. You will also find ideas about how to cope with the disease.

Scientists are studying stomach cancer to find out more about its causes. And they are looking for better ways to treat it.

NCI provides free information about cancer, including the publications mentioned in this booklet. You can order these materials by telephone or on the Internet. You can also read them on the Internet and print your own copy.

- **Telephone (1–800–4–CANCER)**: Information Specialists at NCI's Cancer Information Service can answer your questions about cancer. They also can send NCI booklets, fact sheets, and other materials.
- **Internet (http://www.cancer.gov)**: You can use NCI's Web site to find a wide range of up-to-date information. For example, you can find many NCI booklets and fact sheets at **http://www.cancer.gov/publications**. 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.

*Words that may be new to readers appear in *italics*. The "Dictionary" section explains these terms. Some words in the "Dictionary" have a "sounds-like" spelling to show how to pronounce them.

You can ask questions online and get help right away from Information Specialists through ***LiveHelp*** at **http://www.cancer.gov/cis**.

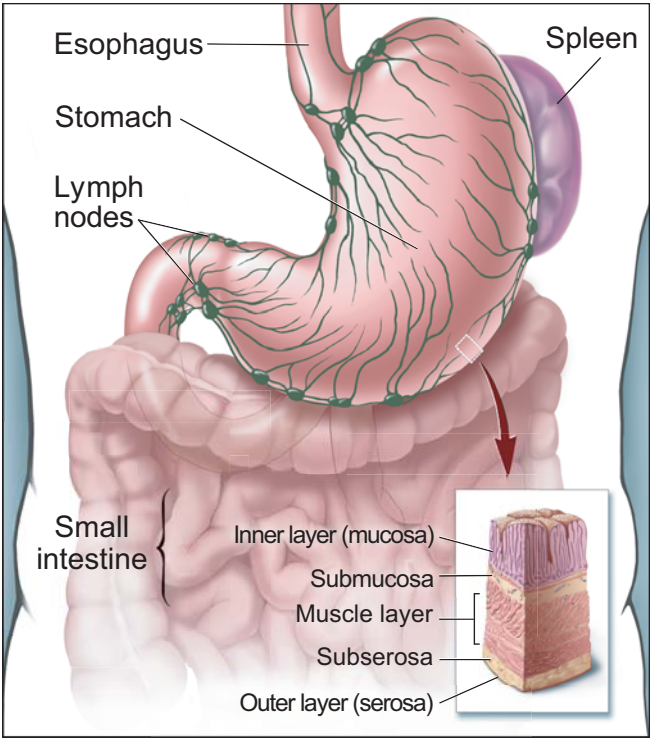
The Stomach

The *stomach* is part of the *digestive system*. It is a hollow *organ* in the upper *abdomen*, under the ribs.

The wall of the stomach has five layers:

- **Inner layer or lining** (*mucosa*): Juices made by *glands* in the inner layer help digest food. Most stomach cancers begin in this layer.
- ***Submucosa****:* This is the support tissue for the inner layer.
- **Muscle layer**: Muscles in this layer create a rippling motion that mixes and mashes food.
- ***Subserosa***: This is the support tissue for the outer layer.
- **Outer layer** (*serosa*): The outer layer covers the stomach. It holds the stomach in place.

Food moves from the mouth through the *esophagus* to reach the stomach. In the stomach, the food becomes liquid. The liquid then moves into the *small intestine*, where it is digested even more.



This picture shows the stomach and nearby organs.

Understanding Cancer

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

Normally, cells grow and divide to form new cells as the body needs them. When cells grow old, they die, and new cells take their place.

Sometimes, this orderly process goes wrong. New cells form when the body does not need them, and old cells do not die when they should. These extra cells can form a mass of tissue called a growth or *tumor*.

Tumors can be *benign* or *malignant*:

- **Benign tumors** are not cancer:
  - —Benign tumors are rarely life-threatening.
  - —Most benign tumors can be removed. They usually do not grow back.
  - —Cells from benign tumors do not invade the tissues around them.
  - —Cells from benign tumors do not spread to other parts of the body.
- **Malignant tumors** are cancer:
  - —Malignant tumors are generally more serious than benign tumors. They may be life-threatening.
  - —Malignant tumors often can be removed. But sometimes they grow back.
  - —Cells from malignant tumors can invade and damage nearby tissues and organs.
  - —Cells from malignant tumors can spread (*metastasize*) to other parts of the body. Cancer cells spread by breaking away from the original tumor and entering the bloodstream or the *lymphatic system*. The cells invade other organs and form new tumors that damage these organs. The spread of cancer is called *metastasis*.

Stomach cancer can affect nearby organs and *lymph nodes*:

- A stomach tumor can grow through the stomach's outer layer into nearby organs, such as the *pancreas*, esophagus, or intestine.
- Stomach cancer cells can spread through the blood to the *liver*, *lungs*, and other organs.
- Cancer cells also can spread through the lymphatic system to lymph nodes all over the body.

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 original tumor. For example, if stomach cancer spreads to the liver, the cancer cells in the liver are actually stomach cancer cells. The disease is metastatic stomach cancer, not liver cancer. For that reason, it is treated as stomach cancer, not liver cancer. Doctors call the new tumor "distant" or metastatic disease.

Risk Factors

No one knows the exact causes of stomach cancer. Doctors often cannot explain why one person develops this disease and another does not.

Research has shown that people with certain *risk factors* are more likely than others to develop stomach cancer. A risk factor is something that may increase the chance of developing a disease.

Studies have found the following risk factors for stomach cancer:

- **Age**: Most people with this disease are 72 or older.
- **Sex**: Men are more likely than women to develop stomach cancer.
- **Race**: Stomach cancer is more common in Asian, Pacific Islander, Hispanic, and African Americans than in non-Hispanic white Americans.
- **Diet**: Studies suggest that people who eat a diet high in foods that are smoked, salted, or pickled may be at increased risk for stomach cancer. On the other hand, eating fresh fruits and vegetables may protect against this disease.

- ***Helicobacter pylori infection***: *H. pylori* is a type of *bacteria* that commonly lives in the stomach. *H. pylori* infection increases the risk of stomach *inflammation* and stomach *ulcers*. It also increases the risk of stomach cancer, but only a small number of infected people develop stomach cancer.

  Although infection increases the risk, cancer is not contagious. You cannot catch stomach cancer from another person who has it.

- **Smoking**: People who smoke are more likely to develop stomach cancer than people who do not smoke.

- **Certain health problems**: Conditions that cause inflammation or other problems in the stomach may increase the risk of stomach cancer:

  —Stomach *surgery*

  —Chronic *gastritis* (long-term inflammation of the stomach lining)

  —*Pernicious anemia* (a blood disease that affects the stomach)

- **Family history**: A rare type of stomach cancer runs in some families.

Most people who have known risk factors do not develop stomach cancer. For example, many people have *H. pylori* in their stomach but never develop cancer. On the other hand, people who do develop the disease sometimes have no known risk factors.

If you think you may be at risk, you should talk with your doctor. Your doctor may be able to suggest ways to reduce your risk and can plan a schedule for checkups.

Symptoms

Early stomach cancer often does not cause clear symptoms. As the cancer grows, the most common symptoms are:

- Discomfort in the stomach area
- Feeling full or bloated after a small meal
- Nausea and vomiting
- Weight loss

Most often, these symptoms are not due to cancer. Other health problems, such as an ulcer or infection, can cause the same symptoms. Anyone with these symptoms should tell the doctor so that problems can be found and treated as early as possible.

Diagnosis

If you have a symptom that suggests stomach cancer, your doctor must find out whether it is really due to cancer or to some other cause. Your doctor may refer you to a *gastroenterologist*, a doctor whose specialty is diagnosing and treating digestive problems.

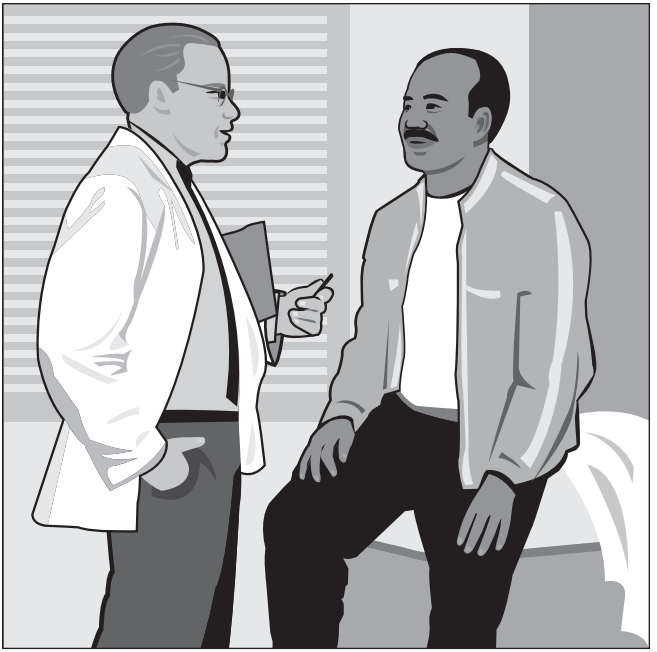
The doctor asks about your personal and family health history. You may have blood or other lab tests. You also may have:

- **Physical exam**: The doctor checks your abdomen for fluid, swelling, or other changes. The doctor also feels for swollen lymph nodes. Your skin and eyes are checked to see if they seem yellow.

- ***Upper GI series***: The doctor orders *x-rays* of your esophagus and stomach. The x-rays are taken after you drink a *barium solution*. The solution makes your stomach show up more clearly on the x-rays.
- ***Endoscopy***: The doctor uses a thin, lighted tube (*endoscope*) to look into your stomach. The doctor first numbs your throat with an *anesthetic* spray. You also may receive medicine to help you relax. The tube is passed through your mouth and esophagus to the stomach.
- ***Biopsy***: The doctor uses an endoscope to remove tissue from the stomach. 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 your doctor these questions about having a biopsy:

- How will the biopsy be done?
- Will I have to go to the hospital?
- Will I have to do anything to prepare for it?
- How long will it take? Will I be awake? Will it hurt?
- Are there any risks? What are the chances of infection or bleeding after the procedure?
- How long will it take me to recover? When can I resume my normal diet?
- How soon will I know the results? Who will explain them to me?
- If I do have cancer, who will talk to me about next steps? When?



Staging

To plan the best treatment, your doctor needs to know the extent (*stage*) of the disease. The stage is based on whether the tumor has invaded nearby tissues, whether the cancer has spread, and if so, to what parts of the body. Stomach cancer can spread to the lymph nodes, liver, pancreas, and other organs. The doctor may order tests to check these areas:

- **Blood tests**: The lab does a *complete blood count* to check for *anemia*. Blood tests also show how well your liver is working.
- ***Chest x-ray***: An x-ray machine takes pictures of your lungs. The doctor can then study these pictures on film. Tumors in your lungs can show up on the x-ray.

- ***CT scan***: An x-ray machine linked to a computer takes a series of detailed pictures of your organs. You may receive an *injection* of dye. The dye makes abnormal areas easier to see. Tumors in your liver, pancreas, or elsewhere in the body can show up on a CT scan.
- ***Endoscopic ultrasound***: The doctor passes a thin, lighted tube (endoscope) down your throat. A probe at the end of the tube sends out sound waves that you cannot hear. The waves bounce off tissues in your stomach and other organs.
- ***Laparoscopy***: A *surgeon* makes small *incisions* (cuts) in your abdomen. The surgeon inserts a thin, lighted tube (*laparoscope*) into the abdomen. The surgeon may remove lymph nodes or take tissue samples for biopsy.

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

These are the stages of stomach cancer:

- **Stage 0**: The cancer is found only in the inner layer of the stomach. It is *carcinoma in situ*.
- **Stage I** is one of the following:
  - —The tumor has invaded only the submucosa. (The picture on page 3 shows the layers of the stomach.) Cancer cells may be found in up to 6 lymph nodes.
  - —Or, the tumor has invaded the muscle layer or subserosa. Cancer cells have not spread to lymph nodes or other organs.
- **Stage II** is one of the following:
  - —The tumor has invaded only the submucosa. Cancer cells have spread to 7 to 15 lymph nodes.
  - —Or, the tumor has invaded the muscle layer or subserosa. Cancer cells have spread to 1 to 6 lymph nodes.

—Or, the tumor has penetrated the outer layer of the stomach. Cancer cells have not spread to lymph nodes or other organs.

- **Stage III** is one of the following:
  - —The tumor has invaded the muscle layer or subserosa. Cancer cells have spread to 7 to 15 lymph nodes.
  - —Or, the tumor has penetrated the outer layer. Cancer cells have spread to 1 to 15 lymph nodes.
  - —Or, the tumor has invaded nearby organs, such as the liver or *spleen*. Cancer cells have not spread to lymph nodes or to distant organs.
- **Stage IV** is one of the following:
  - —Cancer cells have spread to more than 15 lymph nodes.
  - —Or, the tumor has invaded nearby organs and at least 1 lymph node.
  - —Or, cancer cells have spread to distant organs.
- ***Recurrent cancer***: The cancer has come back (recurred) after a period of time when it could not be detected. It may recur in the stomach or in another part of the body.

Treatment

Many people with stomach cancer want to take an active part in making decisions about their medical care. It is natural to want to learn all you can about the disease and your treatment choices. However, shock and stress after the diagnosis can make it hard to think of everything you want to ask your doctor. It often helps to make a list of questions before an appointment.

To help remember what the doctor says, you may take notes or ask whether you may use a tape recorder. You may also want to have a family member or friend with you when you talk to the doctor—to take part in the discussion, to take notes, or just to listen.

You do not need to ask all your questions at once. You will have other chances to ask your doctor or nurse to explain things that are not clear and to ask for more details.

Your doctor may refer you to a specialist who has experience treating stomach cancer, or you may ask for a referral. Specialists who treat stomach cancer include *gastroenterologists*, *surgeons*, *medical oncologists*, and *radiation oncologists*.

Getting a Second Opinion

Before starting treatment, you might want a second opinion about your diagnosis and treatment plan. Many insurance companies cover a second opinion if you or your doctor requests it. It may take some time and effort to gather medical records and arrange to see another doctor. Usually it is not a problem to take several weeks to get a second opinion. In most cases, the delay in starting treatment will not make treatment less effective. To make sure, you should discuss this delay with your doctor. Sometimes people with stomach cancer need treatment right away.

There are a number of ways to find a doctor for a second opinion:

- Your doctor may refer you to one or more specialists. At cancer centers, several specialists often work together as a team.

- NCI's Cancer Information Service, at **1–800–4–CANCER**, can tell you about nearby treatment centers. Information Specialists also can assist you online through ***LiveHelp*** at **http://www.cancer.gov/cis**.
- A local or state medical society, a nearby hospital, or a medical school can usually provide the names of specialists.
- The American Board of Medical Specialties (ABMS) has a list of doctors who have had training and passed exams in their specialty. You can find this list in the *Official ABMS Directory of Board Certified Medical Specialists*. The Directory is in most public libraries. Also, ABMS offers this information at **http://www.abms.org**. (Click on "Who's Certified.")
- NCI provides a helpful fact sheet called "How To Find a Doctor or Treatment Facility If You Have Cancer."

Treatment Methods

The choice of treatment depends mainly on the size and place of the tumor, the stage of disease, and your general health. Treatment for stomach cancer may involve *surgery*, *chemotherapy*, or *radiation therapy*. Many people have more than one type of treatment.

Your doctor can describe your treatment choices and the expected results. You and your doctor can work together to develop a treatment plan that meets your needs.

Cancer treatment is either *local therapy* or *systemic therapy*:

- **Local therapy**: Surgery and radiation therapy are local therapies. They remove or destroy cancer in or near the stomach. When stomach cancer has spread to other parts of the body, local therapy may be used to control the disease in those specific areas.
- **Systemic therapy**: Chemotherapy is systemic therapy. The drug enters the bloodstream and destroys or controls cancer throughout the body.

Because cancer treatments often damage healthy cells and tissues, *side effects* are common. Side effects depend mainly on the type and extent of the treatment. Side effects may not be the same for each person, and they may change from one treatment session to the next.

Before treatment starts, your health care team will explain possible side effects and suggest ways to help you manage them. NCI provides helpful booklets about cancer treatments and coping with side effects. These include *Chemotherapy and You*, *Radiation Therapy and You*, and *Eating Hints for Cancer Patients*.

At any stage of disease, supportive care is available to relieve the side effects of treatment, to control pain and other symptoms, and to ease emotional concerns. Information about such care is available on NCI's Web site at **http://www.cancer.gov/cancertopics/coping**, and from Information Specialists at **1–800–4–CANCER** or ***LiveHelp*** (**http://www.cancer.gov/cis**).

You may want to talk to your doctor about taking part in a *clinical trial*, a research study of new treatment methods. The section on "The Promise of Cancer Research" on page 25 has more information about clinical trials.

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

- What is the stage of the disease?
- What are my treatment choices? Which do you suggest for me? Why?
- Would a clinical trial (research study) be a good choice for me?
- Will I have more than one kind of treatment?
- What are the expected benefits of each kind of treatment?
- What are the risks and possible side effects of each treatment? What can we do to control my side effects? How else can I take care of myself during treatment?
- How will treatment affect my normal activities? Am I likely to have eating or other problems?
- Whom should I call if I have problems during treatment?
- What is the treatment likely to cost? Does my insurance cover this treatment?
- How often should I have checkups?

Surgery

Surgery is the most common treatment for stomach cancer. The type of surgery depends on the extent of the cancer. There are two main types of stomach cancer surgery:

- **Partial (subtotal) *gastrectomy***: The surgeon removes the part of the stomach with cancer. The surgeon also may remove part of the esophagus or part of the small intestine. Nearby lymph nodes and other tissues may be removed.
- **Total gastrectomy**: The doctor removes the entire stomach, nearby lymph nodes, parts of the esophagus and small intestine, and other tissues near the tumor. The spleen also may be removed. The surgeon then connects the esophagus directly to the small intestine. The surgeon makes a new "stomach" out of tissue from the intestine.

It is natural to be concerned about eating after surgery for stomach cancer. 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 20.

The time it takes to heal after surgery is different for each person. You may be uncomfortable for the first few days. Medicine can help control your pain. Before surgery, you should discuss the plan for pain relief with your doctor or nurse. After surgery, your doctor can adjust the plan if you need more pain relief.

Many people who have stomach surgery feel tired or weak for a while. The surgery also can cause *constipation* or *diarrhea*. These symptoms usually can be controlled with diet changes and medicine. Your health care team will watch for signs of bleeding, infection, or other problems that may require treatment.

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

- What kind of surgery do you recommend for me?
- Will you remove lymph nodes? Will you remove other tissue? Why?
- How will I feel after surgery?
- Will I need a special diet?
- If I have pain, how will you control it?
- How long will I be in the hospital?
- Am I likely to have eating problems? 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?

Chemotherapy

Chemotherapy uses anticancer drugs to kill cancer cells. The drugs enter the bloodstream and can affect cancer cells all over the body.

Most people who receive chemotherapy have it after surgery. Radiation therapy may be given along with chemotherapy.

Anticancer drugs for stomach cancer are usually injected into a blood vessel. But some drugs may be given by mouth. You may have your treatment in a clinic at the hospital, at the doctor's office, or at home. Some people may need to stay in the hospital during treatment.

The side effects of chemotherapy depend mainly on the specific drugs and the dose. The drugs affect cancer cells and other cells that divide rapidly:

- **Blood cells**: These cells fight infection, help blood to clot, and carry oxygen to all parts of your body. When drugs affect your blood cells, you are more likely to get infections, bruise or bleed easily, and feel very weak and tired.
- **Cells in hair roots**: Chemotherapy drugs can cause hair loss. Your hair will grow back, but it may be somewhat different in color and texture.
- **Cells that line the digestive tract**: Chemotherapy can cause poor appetite, nausea and vomiting, diarrhea, or mouth and lip sores.

The drugs used for stomach cancer also may cause a skin rash or itching. Your health care team can suggest ways to control many of these side effects.

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

- Why do I need this treatment?
- Which drug or drugs will I have?
- How do the drugs work?
- When will treatment start? When will it end?

Radiation Therapy

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

The radiation comes from a large machine outside the body. Most people go to a hospital or clinic for treatment. Treatments are usually 5 days a week for several weeks.

Side effects depend mainly on the dose of radiation and the part of your body that is treated. Radiation therapy to the abdomen may cause pain in the stomach or the intestine. You may have nausea and diarrhea. Also, your skin in the treated area may become red, dry, and tender.

You are likely to become very tired during radiation therapy, especially in the later weeks of treatment. Resting is important, but doctors usually advise patients to try to stay as active as they can.

Although the side effects of radiation therapy can be distressing, your doctor can usually treat or control them. Also, side effects usually go away after treatment ends.

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

- Why do I need this treatment?
- When will the treatments begin? When will they end?
- How will I feel during treatment?
- How will we know if the radiation treatment is working?
- Are there any lasting effects?

Nutrition

It is important to eat well during and after cancer treatment. You need the right amount of calories, protein, vitamins, and minerals. Eating well may help you feel better and have more energy.

Eating well can be hard. Sometimes, especially during or soon after treatment, you may not feel like eating. You may be uncomfortable or tired. You may find that foods do not taste as good as they used to. You also may have side effects of treatment such as poor appetite, nausea, vomiting, or diarrhea.

A *registered dietitian* can suggest ways to deal with these problems. Some people with stomach cancer are helped by receiving nutrition by a feeding tube or by injection into a blood vessel. Some are helped by nutritional beverage products.

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

Nutrition After Stomach Surgery

Weight loss after surgery for stomach cancer is common. You may need to change the types of food you eat. A registered dietitian can help you plan a diet that will give you the nutrition you need.

Another common problem after stomach surgery is *dumping syndrome*. This problem occurs when food or liquid enters the small intestine too fast. It can cause cramps, nausea, bloating, diarrhea, and dizziness. Eating smaller meals can help prevent dumping syndrome. Also, you may wish to cut down on very sweet foods and drinks, such as cookies, candy, soda, and juices. A registered dietitian can suggest foods to

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

You may need to take daily supplements of vitamins and minerals, such as *calcium*. You also may need injections of *vitamin B12*.

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

- What foods are best soon after surgery?
- How can I avoid dumping syndrome?
- Are there foods or drinks I should avoid?

Follow-up Care

Follow-up care after treatment for stomach cancer is important. Even when there are no longer any signs of cancer, the disease sometimes returns because undetected cancer cells remained somewhere in the body after treatment. Your doctor will monitor your recovery and check for *recurrence* of the cancer. Checkups help ensure that any changes in your health are noted and treated if needed. Checkups may include a physical exam, lab tests, x-rays, CT scans, endoscopy, or other tests. Between scheduled visits, you should contact the doctor if you have any health problems.

Facing Forward Series: Life After Cancer Treatment is an NCI booklet for people who have finished their treatment. It answers questions about follow-up care and other concerns. It has tips for making the best use of medical visits. It also suggests ways to talk with the doctor about making a plan of action for recovery and future health.

Complementary and Alternative Medicine

Some people with cancer use *complementary and alternative medicine* (CAM):

- An approach is generally called complementary medicine when it is used along with standard treatment.
- An approach is called alternative medicine when it is used instead of standard treatment.

Acupuncture, massage therapy, herbal products, vitamins or special diets, visualization, meditation, and spiritual healing are types of CAM.

Many people say that CAM helps them feel better. However, some types of CAM may change the way standard treatment works. These changes could be harmful. And some types of CAM could be harmful even if used alone. Before trying any type of CAM, you should discuss its possible benefits and risks with your doctor.

Some types of CAM are expensive. Health insurance may not cover the cost.

NCI offers a booklet called *Thinking About Complementary and Alternative Medicine: A Guide for People with Cancer*.

You also may request materials from the Federal Government's National Center for Complementary and Alternative Medicine. You can reach their clearinghouse toll-free at 1–888–644–6226 (voice) and 1–866–464–3615 (TTY). In addition, you can visit the Center's Web site at **http://www.nccam.nih.gov**, or send an e-mail to info@nccam.nih.gov.

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

- What benefits can I expect from this approach?
- What are its risks?
- Do the expected benefits outweigh the risks?
- What side effects should I watch for?
- Will CAM change the way my cancer treatment works? Could this be harmful?
- Is this approach under study in a clinical trial? If so, who sponsors the trial?
- Will my health insurance pay for this approach?

Sources of Support

Living with a serious disease such as stomach cancer is not easy. You may worry about caring for your family, keeping your job, or continuing daily activities. Concerns about treatments and managing side effects, hospital stays, and medical bills are also common. Doctors, nurses, and other members of your health care team can answer questions about treatment, working, or other activities. Meeting with a social worker, counselor, or member of the clergy also can be helpful if you want to talk about your feelings or concerns. Often, a social worker 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/cis**) can help you locate programs, services, and publications. For a list of organizations offering support, you may want to get the NCI fact sheet "National Organizations That Offer Services to People With Cancer and Their Families." For tips on coping, you may want to read the NCI booklet *Taking Time: Support for People With Cancer and the People Who Care About Them.*

The Promise of Cancer Research

Doctors all over the country are conducting many types of clinical trials (research studies in which people volunteer to take part). For stomach cancer, they are studying surgery, chemotherapy, radiation therapy, and combinations of these types of treatment.

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, and researchers continue to search for more effective methods for dealing with stomach cancer.

People who join clinical trials may be among the first to benefit if a new approach is effective. And even if people in a trial do not benefit directly, they still make an important contribution by helping doctors learn more about stomach cancer and how to control it in other patients. Although clinical trials may have some risks, doctors do all they can to protect their patients.

If you are interested in being part of a clinical trial, talk with your doctor. You may want to read the NCI booklet *Taking Part in Clinical Trials: What Cancer Patients Need To Know.* NCI also offers an easy-to-read brochure called *If You Have Cancer…What You Should Know About Clinical Trials*. These NCI publications describe how clinical trials are carried out and explain 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 a search form to help you find studies of stomach cancer in progress. Information Specialists at **1–800–4–CANCER** or at ***LiveHelp*** at **http://www.cancer.gov/cis** can answer questions and provide information about clinical trials.

Dictionary

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

Acupuncture (AK-yoo-PUNK-cher): The technique of inserting thin needles through the skin at specific points on the body to control pain and other symptoms. It is a type of complementary and alternative medicine.

Anemia (a-NEE-mee-a): A condition in which the number of red blood cells is below normal.

Anesthetic (an-es-THET-ik): 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.

Bacteria (bak-TEER-ee-uh): A large group of single-cell microorganisms. Some cause infections and disease in animals and humans. The singular of bacteria is bacterium.

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

Benign (beh-NINE): Not cancerous. Benign tumors do not spread to tissues around them or to other parts of the body.

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.

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

Cancer: A term for diseases in which abnormal cells divide without control. Cancer cells can invade nearby tissues and can spread through the bloodstream and lymphatic system to other parts of the body.

Carcinoma in situ (KAR-si-NO-ma in SYE-too): Cancer that involves only cells in the tissue in which it began and that has not spread.

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-mo-THER-ah-pee): Treatment with drugs that kill cancer cells.

Chest x-ray: An x-ray of the structures inside the chest. An x-ray is a type of high-energy radiation that can go through the body and onto film, making pictures of areas inside the chest, which can be used to diagnose disease.

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.

Complementary and alternative medicine: CAM. Forms of treatment that are used in addition to (complementary) or instead of (alternative) standard treatments. These practices generally are not considered standard medical approaches. Standard treatments go through a long and careful research process to prove they are safe and effective, but less is known about most types of CAM. CAM may include dietary supplements, megadose vitamins, herbal preparations, special teas, acupuncture, massage therapy, magnet therapy, spiritual healing, and meditation.

Complete blood count: CBC. A test to check the number of red blood cells, white blood cells, and platelets in a sample of blood. Also called blood cell count.

Constipation (KAHN-stih-PAY-shun): A condition in which stool becomes hard, dry, and difficult to pass, and bowel movements don't happen very often. Other symptoms may include painful bowel movements, and feeling bloated, uncomfortable, and sluggish.

CT scan: Computed tomography scan. 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.

Diarrhea: Frequent and watery bowel movements.

Digestive system (dye-JES-tiv): The organs that take in food and turn it into products that the body can use to stay healthy. Waste products the body cannot use leave the body through bowel movements. The digestive system includes the salivary glands, mouth, esophagus, stomach, liver, pancreas, gallbladder, small and large intestines, and rectum.

Dumping syndrome: A group of symptoms that occur when food or liquid enters the small intestine too rapidly. These symptoms include cramps, nausea, bloating, diarrhea, and dizziness. Dumping syndrome sometimes occurs in people who have had part or all of their stomach removed.

Endoscope (EN-dah-skope): A thin, lighted tube used to look at tissues inside the body.

Endoscopic ultrasound (en-dah-SKAH-pik...): EUS. A procedure in which an endoscope (a thin, lighted tube) is inserted into the body. 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-DAHS-ko-pee): The use of a thin, lighted tube (called an endoscope) to examine the inside of the body.

Esophagus (eh-SOF-a-gus): The muscular tube through which food passes from the throat to the stomach.

Gastrectomy (gas-TREK-tuh-mee): An operation to remove all or part of the stomach.

Gastritis: Inflammation of the lining of the stomach.

Gastroenterologist (GAS-tro-en-ter-AHL-o-jist): A doctor who specializes in diagnosing and treating disorders of the digestive system.

Gland: An organ that makes one or more substances, such as hormones, digestive juices, sweat, tears, saliva, or milk. Endocrine glands release the substances directly into the bloodstream. Exocrine glands release the substances into a duct or opening to the inside or outside of the body.

Helicobacter pylori (HEEL-ih-koh-BAK-ter py-LOR-ee): *H. pylori*. Bacteria that cause inflammation and ulcers in the stomach or small intestine. People with *H. pylori* infections may be more likely to develop cancer in the stomach, including MALT (mucosa-associated lymphoid tissue) lymphoma.

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

Infection: Invasion and multiplication of germs in the body. Infections can occur in any part of the body and can spread throughout the body. The germs may be bacteria, viruses, yeast, or fungi. They can cause a fever and other problems, depending on where the infection occurs. When the body's natural defense system is strong, it can often fight the germs and prevent infection. Some cancer treatments can weaken the natural defense system.

Inflammation (in-fla-MAY-shun): Redness, swelling, pain, and/or a feeling of heat in an area of the body. This is a protective reaction to injury, disease, or irritation of the tissues.

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

Laparoscope (LAP-a-ruh-skope): A thin, lighted tube used to look at tissues and organs inside the abdomen.

Laparoscopy (lap-a-RAHS-ko-pee): The insertion of a thin, lighted tube (called a laparoscope) through the abdominal wall to inspect the inside of the abdomen and remove tissue samples.

Liver: A large organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile.

Local therapy: Treatment that affects cells in the tumor and the area close to it.

Lung: One of a pair of organs in the chest that supplies the body with oxygen, and removes carbon dioxide from the body.

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.

Lymphatic system (lim-FAT-ik SIS-tem): The tissues and organs that produce, store, and carry white blood cells that fight infections and other diseases. This system includes the bone marrow, spleen, thymus, lymph nodes, and lymphatic vessels (a network of thin tubes that carry lymph and white blood cells). Lymphatic vessels branch, like blood vessels, into all the tissues of the body.

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

Medical oncologist (MEH-dih-kul on-KOL-oh-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-ta-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-ta-seez).

Metastasize (meh-TAS-ta-size): To spread from one part of the body to another. When cancer cells metastasize and form secondary tumors, the cells in the metastatic tumor are like those in the original (primary) tumor.

Mucosa (myoo-KO-suh): The moist tissue that lines some organs and body cavities (such as the nose, mouth, lungs, and stomach) and makes mucus (a thick, slippery fluid). Also called mucous membrane.

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

Pancreas: A glandular organ located in the abdomen. It makes pancreatic juices, which contain enzymes that aid in digestion, and it produces several hormones, including insulin. The pancreas is surrounded by the stomach, intestines, and other organs.

Pathologist (pa-THOL-o-jist): A doctor who identifies diseases by studying cells and tissues under a microscope.

Pernicious anemia (per-NISH-us a-NEE-mee-a): A type of anemia (low red blood cell count) caused by the body's inability to absorb vitamin B12.

Radiation oncologist (ray-dee-AY-shun on-KOL-o-jist): A doctor who specializes in using radiation to treat cancer.

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

Recurrence: Cancer that has returned after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body. Also called recurrent cancer.

Recurrent cancer: Cancer that has returned after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body. Also called recurrence.

Registered dietitian (dy-uh-TIH-shun): A health professional with special training in nutrition who provides recommendations to the medical team to improve the nutritional status of patients.

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, exposure to radiation or other cancer-causing agents, and certain genetic changes.

Serosa (suh-RO-suh): The outer layer of the stomach. It holds the stomach in place in the abdomen. Also called serous membrane.

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.

Small intestine (in-TES-tin): The part of the digestive tract that is located between the stomach and the large intestine.

Spleen: An organ that is part of the lymphatic system. The spleen produces lymphocytes, filters the blood, stores blood cells, and destroys old blood cells. It is located on the left side of the abdomen near the stomach.

Stage: The extent of a cancer in the body. Staging is usually based on the size of the tumor, whether lymph nodes contain cancer, and whether the cancer has spread from the original site to other parts of the body.

Stomach: An organ that is part of the digestive system. The stomach helps in the digestion of food by mixing it with digestive juices and churning it into a thin liquid.

Submucosa (sub-myoo-KO-suh): The layer of tissue beneath mucosa (mucous membrane).

Subserosa (sub-suh-RO-suh): The layer of tissue beneath serosa (serous membrane).

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.

Systemic therapy (sis-TEH-mik THER-uh-pee): Treatment using substances that travel through the bloodstream, reaching and affecting cells all over the body.

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.

Ulcer (UHL-ser): A break on the skin, in the lining of an organ, or on the surface of a tissue. An ulcer forms when the surface cells die and are cast off. Ulcers may be associated with cancer and other diseases.

Upper GI series: A series of x-rays of the upper digestive (gastrointestinal or GI) system that are taken after a person drinks a barium solution, which outlines the digestive organs on the x-rays.

Vitamin B12: A vitamin that is needed to make red blood cells and DNA (the genetic material in cells) and to keep nerve cells healthy.

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 National Cancer Institute (NCI) services are available to help you.

Telephone

The NCI's Cancer Information Service (CIS) provides accurate, up-to-date information on cancer to patients and their families, health professionals, and the general public. Information Specialists explain the latest scientific information in plain language and respond in English, Spanish, or on TTY equipment. Calls to the CIS are free.

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

TTY: 1–800–332–8615

Internet

The NCI's Web site (**http://www.cancer.gov**) provides information from many NCI sources. It offers current information on cancer prevention, screening, diagnosis, treatment, genetics, supportive care, and ongoing clinical trials. It has information about NCI's research programs and funding opportunities, cancer statistics, and the Institute itself. Information Specialists provide live, online assistance through ***LiveHelp*** at **http://www.cancer.gov/cis**.

National Cancer Institute Publications

National Cancer Institute (NCI) publications can be ordered by writing to the address below:

Publications Ordering Service
National Cancer Institute
Suite 3035A
6116 Executive Boulevard, MSC 8322
Bethesda, MD 20892–8322

Many NCI publications can be viewed, downloaded, and ordered from **http://www.cancer.gov/publications** on the Internet. In addition, 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**.

Cancer Treatment and Support

- *Chemotherapy and You: A Guide to Self-Help During Cancer Treatment* (also available in Spanish: *La quimioterapia y usted: una guía de autoayuda durante el tratamiento del cáncer*)
- *Helping Yourself During Chemotherapy: 4 Steps for Patients*
- *Radiation Therapy and You: A Guide to Self-Help During Cancer Treatment* (also available in Spanish: *La radioterapia y usted: una guía de autoayuda durante el tratamiento del cáncer*)
- *Eating Hints for Cancer Patients: Before, During & After Treatment* (also available in Spanish: *Consejos de alimentación para pacientes con cáncer: antes, durante y después del tratamiento*)
- *Understanding Cancer Pain* (also available in Spanish: *El dolor relacionado con el cáncer*)

- *Pain Control: A Guide for People with Cancer and Their Families* (also available in Spanish: *Control del dolor: guía para las personas con cáncer y sus familias*)
- *Get Relief from Cancer Pain*
- *Thinking About Complementary and Alternative Medicine: A Guide for People with Cancer*
- "How To Find a Doctor or Treatment Facility If You Have Cancer" (also available in Spanish: "Cómo encontrar a un doctor o un establecimiento de tratamiento si usted tiene cáncer")
- "National Organizations That Offer Services to People With Cancer and Their Families" (also available in Spanish: "Organizaciones nacionales que brindan servicios a las personas con cáncer y a sus familias")

Living With Cancer

- *Advanced Cancer: Living Each Day*
- *Facing Forward Series: Life After Cancer Treatment* (also available in Spanish: *Siga adelante: la vida después del tratamiento del cáncer*)
- *Facing Forward Series: Ways You Can Make a Difference in Cancer*
- *Taking Time: Support for People with Cancer and the People Who Care About Them*
- *When Cancer Recurs: Meeting the Challenge*

Clinical Trials

- *Taking Part in Clinical Trials: What Cancer Patients Need To Know* (also available in Spanish: *La participación en los estudios clínicos: lo que los pacientes de cáncer deben saber*)
- *If You Have Cancer...What You Should Know About Clinical Trials* (also available in Spanish: *Si tiene cáncer...lo que debería saber sobre estudios clínicos*)
- *Taking Part in Clinical Trials: Cancer Prevention Studies: What Participants Need To Know* (also available in Spanish: *La participación en los estudios clínicos: estudios para la prevención del cáncer*)

The National Cancer Institute (NCI) is part of the National Institutes of Health. NCI conducts and supports basic and clinical research in the search for better ways to prevent, diagnose, and treat cancer. NCI also supports the training of scientists and is responsible for communicating its research findings to the medical community and the public.

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