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What

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You

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Need

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Know

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About™

# Cancer of the Larynx

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

This booklet is about cancer of the larynx. 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. The call is free.

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Este folleto es acerca del cáncer de laringe. 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. La llamada es gratis.

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## What You Need To Know About™ Cancer of the Larynx

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**T**his National Cancer Institute (NCI) booklet has important information about *cancer\** of the larynx. Each year in the United States, more than 10,000 people learn they have this type of cancer.

This booklet discusses possible causes, symptoms, diagnosis, and treatment. It also has information to help patients cope with cancer of the larynx.

Information specialists at the NCI's Cancer Information Service at 1-800-4-CANCER can answer questions about cancer and can send NCI materials. Many NCI publications and fact sheets are on the Internet at <http://cancer.gov/publications>. People in the United States and its territories may use this Web site to order publications. This Web site also explains how people outside the United States can mail or fax their requests for NCI publications.

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

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## The Larynx

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**T**he *larynx* is an *organ* at the front of your neck. It is also called the voice box. It is about 2 inches long and 2 inches wide. It is above the windpipe (*trachea*). Below and behind the larynx is the *esophagus*.

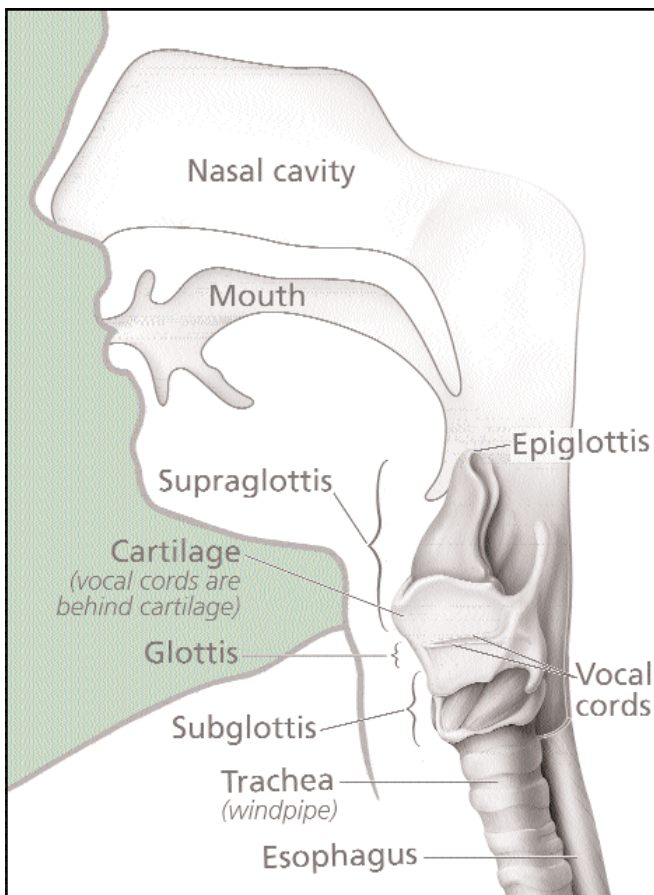
The larynx has two bands of muscle that form the *vocal cords*. The *cartilage* at the front of the larynx is sometimes called the Adam's apple.

The larynx has three main parts:

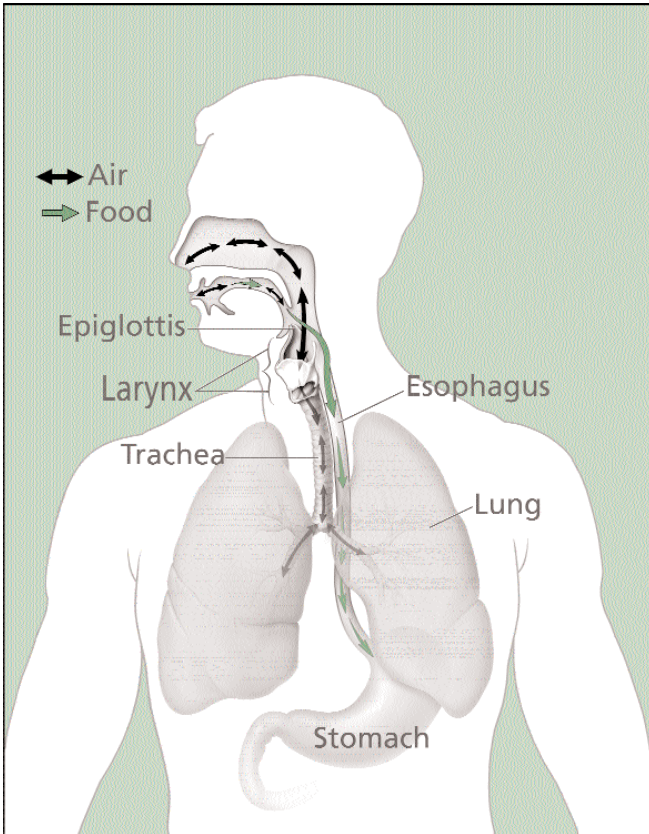
- The top part of the larynx is the *supraglottis*.
- The *glottis* is in the middle. Your vocal cords are in the glottis.
- The *subglottis* is at the bottom. The subglottis connects to the windpipe.

The larynx plays a role in breathing, swallowing, and talking. The larynx acts like a valve over the windpipe. The valve opens and closes to allow breathing, swallowing, and speaking:

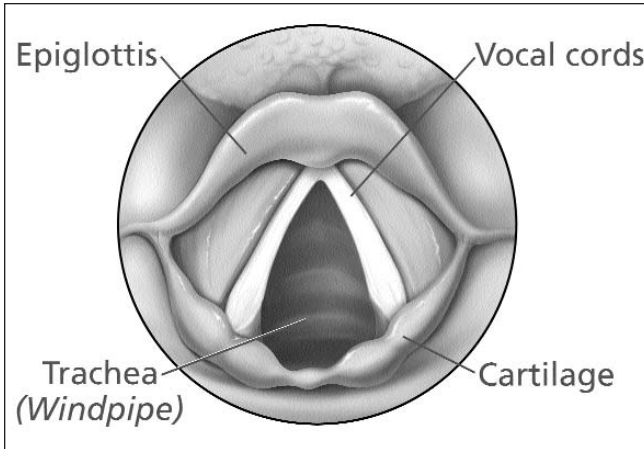
- **Breathing:** When you breathe, the vocal cords relax and open. When you hold your breath, the vocal cords shut tightly.
- **Swallowing:** The larynx protects the windpipe. When you swallow, a flap called the *epiglottis* covers the opening of your larynx to keep food out of your lungs. The food passes through the esophagus on its way from your mouth to your stomach.
- **Talking:** The larynx produces the sound of your voice. When you talk, your vocal cords tighten and move closer together. Air from your lungs is forced between them and makes them vibrate. This makes the sound of your voice. Your tongue, lips, and teeth form this sound into words.



This picture shows the main parts of the larynx.



This picture shows the larynx and the normal pathways for air and food.



This picture shows how the larynx looks from above. It is what the doctor can see with a mirror.

## What Is Cancer?

**C**ancer begins in *cells*, the building blocks that make up *tissues*. Tissues make up the organs of your body. Normally, cells grow and divide to form new cells as your 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*. Growths on the larynx also may be called *nodules* or *polyps*. Not all growths are cancer. Growths can be *benign* or *malignant*:

- **Benign growths** are not cancer:
  - They are rarely life-threatening.
  - Usually, benign tumors can be removed, and they seldom grow back.
  - Cells from benign tumors do not spread to tissues around them or to other parts of the body.



- **Malignant growths** are cancer:
  - They are generally more serious and may be life-threatening.
  - Malignant tumors usually can be removed, but they can grow back.
  - Cells from malignant tumors invade and damage nearby tissues and organs. Also, cancer cells can break away from a malignant tumor and enter the bloodstream or *lymphatic system*. That is how cancer cells spread from the original cancer (the *primary tumor*) to form new tumors in other organs. The spread of cancer is called *metastasis*. Different types of cancer tend to spread to different parts of the body.

Cancer of the larynx also may be called *laryngeal* cancer. It can develop in any part of the larynx. Most cancers of the larynx begin in the glottis. The inner walls of the larynx are lined with cells called *squamous cells*. Almost all laryngeal cancers begin in these cells. These cancers are called *squamous cell carcinomas*.

If cancer of the larynx spreads (metastasizes), the cancer cells often spread to nearby *lymph nodes* in the neck. The cancer cells can also spread to the back of the tongue, other parts of the throat and neck, the lungs, and other parts of the body. When this happens, the new tumor has the same kind of abnormal cells as the primary tumor in the larynx. For example, if cancer of the larynx spreads to the lungs, the cancer cells in the lungs are actually laryngeal cancer cells. The disease is called metastatic cancer of the larynx, not lung cancer. It is treated as cancer of the larynx, not lung cancer. Doctors sometimes call the new tumor “distant” disease.

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## Cancer of the Larynx: Who's at Risk?

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**N**o one knows the exact causes of cancer of the larynx. Doctors cannot explain why one person gets this disease and another does not. We do know that cancer is not contagious. You cannot “catch” cancer from another person.

People with certain risk factors are more likely to get cancer of the larynx. A risk factor is anything that increases your chance of developing this disease.

Studies have found the following risk factors:

- **Age.** Cancer of the larynx occurs most often in people over the age of 55.
- **Gender.** Men are four times more likely than women to get cancer of the larynx.
- **Race.** African Americans are more likely than whites to be diagnosed with cancer of the larynx.
- **Smoking.** Smokers are far more likely than nonsmokers to get cancer of the larynx. The risk is even higher for smokers who drink alcohol heavily.

People who stop smoking can greatly decrease their risk of cancer of the larynx, as well as cancer of the lung, mouth, pancreas, bladder, and esophagus. Also, quitting smoking reduces the chance that someone with cancer of the larynx will get a second cancer in the head and neck region. (Cancer of the larynx is part of a group of cancers called *head and neck cancers*.)

- **Alcohol.** People who drink alcohol are more likely to develop laryngeal cancer than people who don't drink. The risk increases with the amount of alcohol that is consumed. The risk also increases if the person drinks alcohol and also smokes tobacco.

- **A personal history of head and neck cancer.**  
Almost one in four people who have had head and neck cancer will develop a second primary head and neck cancer.
- **Occupation.** Workers exposed to sulfuric acid mist or nickel have an increased risk of laryngeal cancer. Also, working with *asbestos* can increase the risk of this disease. Asbestos workers should follow work and safety rules to avoid inhaling asbestos fibers.

Other studies suggest that having certain *viruses* or a diet low in vitamin A may increase the chance of getting cancer of the larynx. Another risk factor is having *gastroesophageal reflux disease* (GERD), which causes stomach acid to flow up into the esophagus.

Most people who have these risk factors do not get cancer of the larynx. If you are concerned about your chance of getting cancer of the larynx, you should discuss this concern with your health care provider. Your health care provider may suggest ways to reduce your risk and can plan an appropriate schedule for checkups.

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## Symptoms

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**T**he symptoms of cancer of the larynx depend mainly on the size of the tumor and where it is in the larynx. Symptoms may include the following:

- Hoarseness or other voice changes
- A lump in the neck
- A sore throat or feeling that something is stuck in your throat
- A cough that does not go away
- Problems breathing
- Bad breath

- An earache
- Weight loss

These symptoms may be caused by cancer or by other, less serious problems. Only a doctor can tell for sure.

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## Diagnosis

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**I**f you have symptoms of cancer of the larynx, the doctor may do some or all of the following exams:

- **Physical exam.** The doctor will feel your neck and check your *thyroid*, larynx, and lymph nodes for abnormal lumps or swelling. To see your throat, the doctor may press down on your tongue.
- **Indirect laryngoscopy.** The doctor looks down your throat using a small, long-handled mirror to check for abnormal areas and to see if your vocal cords move as they should. This test does not hurt. The doctor may spray a *local anesthesia* in your throat to keep you from gagging. This exam is done in the doctor's office.
- **Direct laryngoscopy.** The doctor inserts a thin, lighted tube called a *laryngoscope* through your nose or mouth. As the tube goes down your throat, the doctor can look at areas that cannot be seen with a mirror. A local anesthetic eases discomfort and prevents gagging. You may also receive a mild sedative to help you relax. Sometimes the doctor uses *general anesthesia* to put a person to sleep. This exam may be done in a doctor's office, an outpatient clinic, or a hospital.



- **CT scan.** An *x-ray* machine linked to a computer takes a series of detailed pictures of the neck area. You may receive an injection of a special dye so your larynx shows up clearly in the pictures. From the CT scan, the doctor may see tumors in your larynx or elsewhere in your neck.
- **Biopsy.** If an exam shows an abnormal area, the doctor may remove a small sample of tissue. Removing tissue to look for cancer cells is called a biopsy. For a biopsy, you receive local or general anesthesia, and the doctor removes tissue samples through a laryngoscope. A *pathologist* then looks at

the tissue under a microscope to check for cancer cells. A biopsy is the only sure way to know if a tumor is cancerous.

If you need a biopsy, you may want to ask the doctor the following questions:

- What kind of biopsy will I have? Why?
- How long will it take? Will I be awake? Will it hurt?
- How soon will I know the results?
- Are there any risks? What are the chances of infection or bleeding after the biopsy?
- If I do have cancer, who will talk to me about treatment? When?

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## Staging

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**T**o plan the best treatment, your doctor needs to know the *stage*, or extent, of your disease. *Staging* is a careful attempt to learn whether the cancer has spread and, if so, to what parts of the body. The doctor may use x-rays, CT scans, or *magnetic resonance imaging* to find out whether the cancer has spread to lymph nodes, other areas in your neck, or distant sites.

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## Treatment

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**P**eople with cancer of the larynx often want to take an active part in making decisions about their medical care. It is natural to want to learn all you can about your disease and treatment choices. However, shock and stress after a diagnosis of cancer can make it

hard to remember what you want to ask the doctor. Here are some ideas that might help:

- Make a list of questions.
- Take notes at the appointment.
- Ask the doctor if you may use a tape recorder during the appointment.
- Ask a family member or friend to come to the appointment with you.

Your doctor may refer you to a specialist who treats cancer of the larynx, such as a *surgeon*, *otolaryngologist* (an ear, nose, and throat doctor), *radiation oncologist*, or *medical oncologist*. You can also ask your doctor for a referral. Treatment usually begins within a few weeks of the diagnosis. Usually, there is time to talk to your doctor about treatment choices, get a second opinion, and learn more about the disease before making a treatment decision.

## Getting a Second Opinion

Before starting treatment, you might want a second opinion about your diagnosis and treatment plan. Some insurance companies require a second opinion; others may cover a second opinion if you or your doctor requests it. There are a number of ways to find a doctor for a second opinion:

- Your doctor may refer you or you may ask for a referral to one or more specialists. At cancer centers, several specialists often work together as a team. The team may include a surgeon, radiation oncologist, medical oncologist, *speech pathologist*, and *nutritionist*. At some cancer centers, you may be able to see them all on the same day.



- The Cancer Information Service, at 1-800-4-CANCER, can tell you about treatment centers near you.
- A local medical society, a nearby hospital, or a medical school can often provide the names of specialists in your area.
- The *Official ABMS Directory of Board Certified Medical Specialists* lists doctors' names along with their specialty and their educational background. Board-certified doctors have met specific education and training requirements and have passed an examination given by a specialty board. The directory is available in most public libraries. The



American Board of Medical Specialties (ABMS) also offers information about board certification by telephone and on the Internet. The toll-free telephone number is 1-866-ASK-ABMS (1-866-275-2267). The Internet address is <http://www.abms.org/newsearch.asp>.

## Preparing for Treatment

The doctor can describe your treatment choices and the results you can expect for each treatment option. You will want to consider how treatment may change the way you look, breathe, and talk. You and your doctor can work together to develop a treatment plan that meets your needs and personal values.

The choice of treatment depends on a number of factors, including your general health, where in the larynx the cancer began, the size of the tumor, and whether the cancer has spread.

You may want to talk with the doctor about taking part in a *clinical trial*, a research study of new treatment methods. Clinical trials are an important option. Patients who join trials have the first chance to benefit from new treatments that have shown promise in earlier research. The section on “The Promise of Cancer Research” on page 33 has more information about research in progress.

If you smoke, a good way to prepare for treatment is to stop smoking. Studies show that treatment is more likely to be successful for people who don't smoke. Your doctor or the Cancer Information Service (1-800-4-CANCER) may be able to suggest ways to help you stop smoking.

These are questions you may want to ask your doctor before treatment begins:

- Where is my cancer and has it spread?
- What are my treatment choices? Which do you recommend for me? Why?
- What are the benefits of each treatment?
- What are the risks and possible *side effects* of each treatment?
- How will I look after treatment?
- How will I speak after treatment? Will I need to work with a speech therapist?
- Will I have problems eating?
- Will I need to change my daily activities?
- When can I return to work?
- What is the treatment likely to cost? Is this treatment covered by my insurance plan?
- Would a clinical trial (research study) be right for me? Can you help me find one?
- How often will I need checkups?

You do not need to ask all your questions or understand all the answers at once. You will have many chances to ask the doctor and the rest of the health care team to explain things that are not clear and to ask for more information.

## Methods of Treatment

Cancer of the larynx may be treated with *radiation therapy*, *surgery*, or *chemotherapy*. Some patients have a combination of therapies.

These are questions you may want to ask your doctor before having radiation therapy:

- Why do I need this treatment?
- What are the risks and side effects of this treatment?
- Are there any long-term effects?
- Should I see my dentist before I start treatment?
- When will the treatments begin? When will they end?
- How will I feel during therapy?
- What can I do to take care of myself during therapy?
- Can I continue my normal activities?
- How will my neck look afterward?
- What is the chance that the tumor will come back?
- How often will I need checkups?

**Radiation therapy** (also called radiotherapy) uses high-energy x-rays to kill cancer cells. The rays are aimed at the tumor and the tissue around it. Radiation therapy is *local therapy*. It affects cells only in the treated area. Treatments are usually given 5 days a week for 5 to 8 weeks.

Laryngeal cancer may be treated with radiation therapy alone or in combination with surgery or chemotherapy:

- **Radiation therapy alone:** Radiation therapy is used alone for small tumors or for patients who cannot have surgery.

- **Radiation therapy combined with surgery:**  
Radiation therapy may be used to shrink a large tumor before surgery or to destroy cancer cells that may remain in the area after surgery. If a tumor grows back after surgery, it is often treated with radiation.
- **Radiation therapy combined with chemotherapy:**  
Radiation therapy may be used before, during, or after chemotherapy.

After radiation therapy, some people need feeding tubes placed into the abdomen. The feeding tube is usually temporary.

**Surgery** is an operation in which a doctor removes the cancer using a *scalpel* or *laser* while the patient is asleep. When patients need surgery, the type of operation depends mainly on the size and exact location of the tumor.

There are several types of *laryngectomy* (surgery to remove part or all of the larynx):

- **Total laryngectomy:** The surgeon removes the entire larynx.
- **Partial laryngectomy (hemilaryngectomy):** The surgeon removes part of the larynx.
  - **Supraglottic laryngectomy:** The surgeon takes out the supraglottis, the top part of the larynx.
  - **Cordectomy:** The surgeon removes one or both vocal cords.

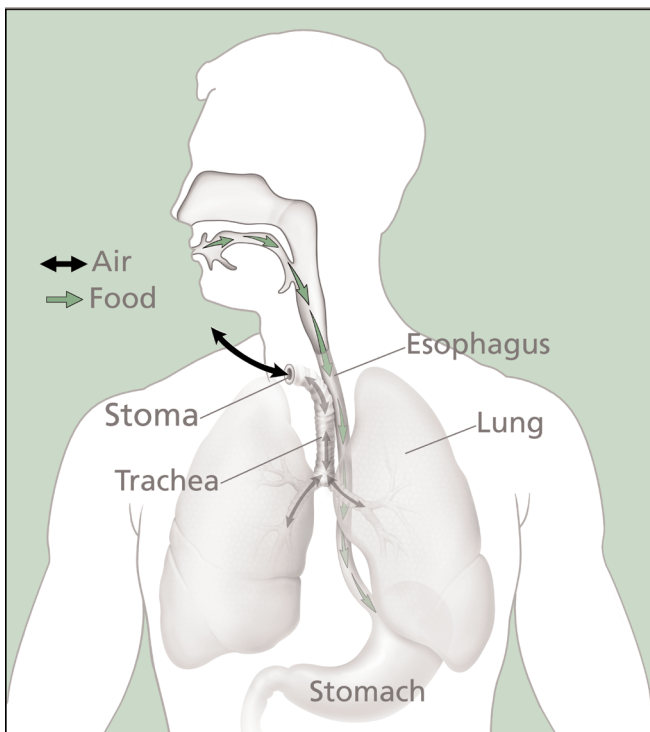
Sometimes the surgeon also removes the lymph nodes in the neck. This is called *lymph node dissection*. The surgeon also may remove the thyroid.

Here are some questions to ask the doctor before having surgery:

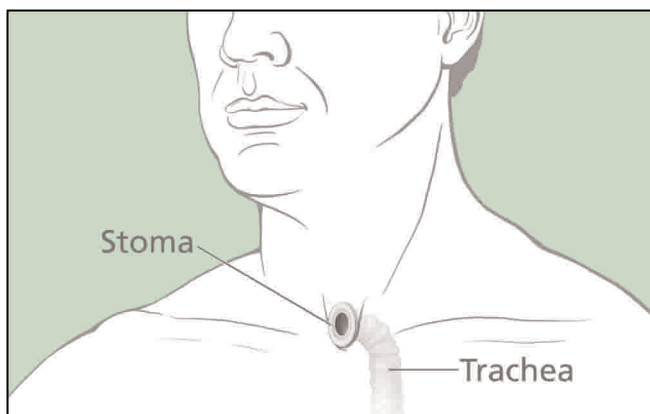
- How will I feel after the operation?
- Will I need a tracheostomy?
- Will I need to learn how to take care of myself or my incision when I get home?
- Where will the scars be? What will they look like?
- Will surgery affect my ability to speak? If so, who will teach me how to speak in a new way?
- When can I get back to my normal activities?

During surgery for cancer of the larynx, the surgeon may need to make a *stoma*. (This surgery is called a *tracheostomy*.) The stoma is a new airway through an opening in the front of the neck. Air enters and leaves the windpipe (trachea) and lungs through this opening. A *tracheostomy tube*, also called a trach (“trake”) tube, keeps the new airway open. For many patients, the stoma is temporary. It is needed only until the patient recovers from surgery. More information about stomas can be found on page 27 in the “Living with a Stoma” section.

After surgery, some people may need a temporary feeding tube.



This picture shows the pathways for air and food after a total laryngectomy.



The stoma is the new opening into the trachea.

**Chemotherapy** is the use of drugs to kill cancer cells. Your doctor may suggest one drug or a combination of drugs. The drugs for cancer of the larynx are usually given by injection into the bloodstream. The drugs enter the bloodstream and travel throughout the body.

Chemotherapy is used to treat laryngeal cancer in several ways:

- **Before surgery or radiation therapy:** In some cases, drugs are given to try to shrink a large tumor before surgery or radiation therapy.
- **After surgery or radiation therapy:** Chemotherapy may be used after surgery or radiation therapy to kill any cancer cells that may be left. It also may be used for cancers that have spread.
- **Instead of surgery:** Chemotherapy may be used with radiation therapy instead of surgery. The larynx is not removed and the voice is spared.

Chemotherapy may be given in an outpatient part of the hospital, at the doctor's office, or at home. Rarely, a hospital stay may be needed.

These are questions you may want to ask your doctor before having chemotherapy:

- Why do I need this treatment?
- What will it do?
- Will I have side effects? What can I do about them?
- How long will I be on this treatment?
- How often will I need checkups?

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## Side Effects of Cancer Treatment

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**C**ancer treatments are very powerful. Treatments that remove or destroy cancer cells are likely to damage healthy cells, too. That’s why treatments often cause side effects. This section describes some of the side effects of each kind of treatment.

Side effects may not be the same for each person, and they may even change from one treatment session to the next. Before treatment starts, your health care team will explain possible side effects and how they can be managed. It may help to know that although some side effects may not go away completely, most of them become less troubling.

It may also help to talk with other patients. A social worker, nurse, or other member of the medical team can set up a visit with someone who has had the same treatment.

The NCI provides helpful booklets about cancer treatments and coping with side effects, such as *Radiation Therapy and You* and *Eating Hints for Cancer Patients*. See pages 44 and 45 for the “National Cancer Institute Information Resources” and “National Cancer Institute Booklets” sections for other sources of information about side effects.

### **Radiation Therapy**

People treated with radiation therapy may have some or all of these side effects:

- **Dry mouth.** Drinking lots of fluids can help. Some patients find artificial *saliva* helpful. It comes in a spray or squeeze bottle.



- **Sore throat or mouth.** Your health care provider may suggest special rinses to numb your throat and mouth and help relieve the soreness.
- **Delayed healing after dental care.** Many doctors recommend having a dental exam and any needed dental work before radiation therapy.
- **Tooth decay.** Good mouth care can help keep your teeth and gums healthy and can help you feel better. If it's hard to floss or brush your teeth in the usual way, you can try using gauze, a soft toothbrush, or a toothbrush that has a spongy tip instead of bristles. A mouthwash made with diluted peroxide, salt water, baking soda, or a combination can keep your mouth fresh and help protect your teeth from decay. It may also be helpful to use fluoride toothpaste or rinse.
- **Changes in sense of taste and smell.** During radiation therapy, food may taste or smell different.
- **Fatigue.** During radiation therapy, you may become very tired, especially in the later weeks of treatment. Resting is important, but doctors usually advise their patients to stay as active as they can.
- **Changes in voice quality.** Your voice may be weak at the end of the day. It may also be affected by changes in the weather. Voice changes and the feeling of a lump in your throat may come from swelling in the larynx caused by the radiation. The doctor may suggest medicine to reduce this swelling.
- **Skin changes in treated area.** The skin in the treated area may become red or dry. Good skin care is important at this time. Try to expose this area to the air but protect it from the sun. Avoid wearing clothes that rub, and do not shave the treated area.

You should not put anything on your skin before radiation treatments. Also, you should never use lotion or cream without your doctor's advice.

## Surgery

People who have surgery may have any of these side effects:

- **Pain.** You may be uncomfortable for the first few days after surgery. However, medicine can usually control the pain. You should feel free to discuss pain relief with the doctor or nurse.
- **Low energy.** It is common to feel tired or weak after surgery. The length of time it takes to recover from an operation is different for each patient.
- **Swelling in the throat.** For a few days after surgery, you won't be able to eat, drink, or swallow. At first, you will receive fluid through an *intravenous* (IV) tube placed into your arm. Within a day or two, you will get fluids and nutrition through a feeding tube (put in place during surgery) that goes through your nose and throat into your stomach. When the swelling goes away and the area begins to heal, the feeding tube will be removed. Swallowing may be difficult at first, and you may need the help of a nurse or speech pathologist. Soon you will be eating your regular diet.

If you need a feeding tube for longer than one week, you may get a tube that goes directly into the abdomen. Most patients slowly return to eating solid foods by mouth, but for a very few patients, the feeding tube may be permanent.

- **Increased mucus production.** After the operation, the lungs and windpipe produce a lot of mucus, also called *sputum*. To remove it, the nurse applies gentle suction by placing a small plastic tube in the stoma.

You will learn to cough and suction mucus through the stoma without the nurse's help.

- **Numbness, stiffness, or weakness.** After a laryngectomy, parts of the neck and throat may be numb because nerves have been cut. Also, the shoulder, neck, and arm may be weak and stiff. You may need *physical therapy* to improve your strength and flexibility after surgery.
- **Changes in physical appearance.** Your neck will be somewhat smaller, and it will have scars. Some patients find it helpful to wear clothing that covers the neck area.
- **Tracheostomy.** Patients who have surgery will have a stoma. With most supraglottic and partial laryngectomies, the stoma is temporary. After a short recovery period, the tube can be removed, and the stoma closes up. You should then be able to breathe and talk in the usual way. In some people, however, the voice may be hoarse or weak.

After a total laryngectomy, the stoma is permanent. If you have a total laryngectomy, you will need to learn to speak in a new way. The section called “Learning to Speak Again” on page 28 has more information.

More information about stomas may be found in the “Living with a Stoma” section on page 27.

## Chemotherapy

The side effects of chemotherapy depend mainly on the specific drugs and the dose. In general, anticancer drugs affect cells that divide rapidly:

- **Blood cells:** These cells fight infection, help your blood to clot, and carry oxygen to all parts of your body. If your blood cells are affected, you are more

likely to get infections, may bruise or bleed easily, and may feel very weak and tired.

- **Cells in hair roots:** Chemotherapy can lead to hair loss, but hair will grow back. However, the new hair may be 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. Many of these side effects can be controlled with new or improved drugs.

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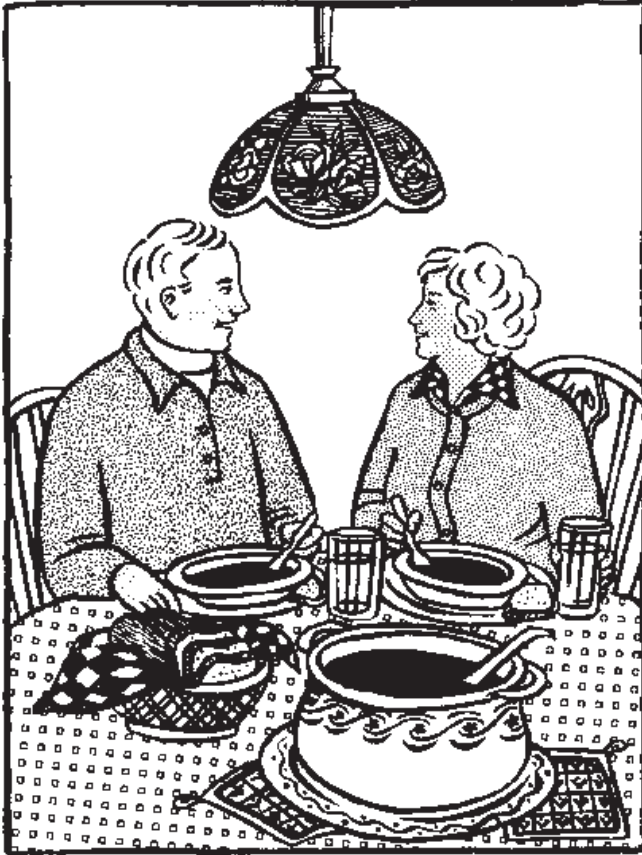
## Nutrition

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**S**ome people who have had treatment for cancer of the larynx may lose their interest in food. Soreness and changes in smell and taste may make eating difficult. Yet good nutrition is important. Eating well means getting enough calories and protein to prevent weight loss, regain strength, and rebuild healthy tissues.

If eating is difficult because your mouth is dry from radiation therapy, you may want to try soft, bland foods moistened with sauces or gravies. Thick soups, puddings, and milkshakes often are easier to swallow. The nurse and the dietitian will help you choose the right foods.

After surgery or radiation therapy, some people need feeding tubes placed into the abdomen. Most people slowly return to a regular diet. Learning to swallow again may take some practice with the help of a nurse or speech pathologist. Some people find liquids easier to swallow; others do better with solid foods. You will find what works best for you.




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## Living with a Stoma

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**L**earning to live with the changes brought about by cancer of the larynx is a special challenge. The medical team will make every effort to help you return to your normal routine as soon as possible.

If you have a stoma, you will need to learn how to care for it:

- Before leaving the hospital, you will learn to remove and clean the trach tube, suction the trach, and care for the skin around the stoma.
- If the air is too dry, as it may be in heated buildings in the winter, the tissues of the windpipe and lungs may produce extra mucus. Also, the skin around the stoma may get sore. Keeping the skin around the stoma clean and using a *humidifier* at home or at the office can lessen these problems.
- It is very dangerous for water to get into the windpipe and lungs through the stoma. Wearing a special plastic stoma shield or holding a washcloth over the stoma keeps water out when showering or shaving. Other types of stoma covers—such as scarves, neckties, and specially made covers—help keep moisture in and around the stoma. They help filter smoke and dust from the air before it enters the stoma. They also catch any fluids that come out of the windpipe when you cough or sneeze. Many people choose to wear something over their stoma even after the area heals. Stoma covers can be attractive as well as useful.
- When shaving, men should keep in mind that the neck may be numb for several months after surgery. To avoid nicks and cuts, it may be best to use an electric shaver until the numbness goes away.

People with stomas work in almost every type of business and can do nearly all of the things they did before. However, they cannot hold their breath, so straining and heavy lifting may be difficult. Also, swimming and water skiing are not possible without special instruction and equipment to keep water from entering the stoma.

Some people may feel self-conscious about the way they look and speak. They may be concerned about how other people feel about them. They may be concerned about how their sexual relationships may be affected. Many people find that talking about these concerns helps them. Counseling or support groups may also be helpful.

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## Learning To Speak Again

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**T**alking is part of nearly everything we do, so it's natural to be scared if your voice box must be removed. Losing the ability to talk—even for a short time—is hard. Patients and their families and friends need understanding and support during this time.

Within a week or so after a partial laryngectomy, you will be able to talk in the usual way. After a total laryngectomy, however, you must learn to speak in a new way. A speech pathologist usually meets with you before surgery to explain the methods that can be used. In many cases, speech lessons start before you leave the hospital.

Until you begin to talk again, it is important to have other ways to communicate. Here are some ideas that you may find helpful:

- Keep pads of paper and pens or pencils in your pocket or purse.
- Use a typewriter, computer, or other electronic device. Your words can be printed on paper,

displayed on a screen, or produced in a male or female voice.

- Carry a small dictionary or a picture book and point to the words you need.
- Write notes on a “magic slate” (a toy with a plastic sheet that covers black wax; lifting the plastic erases the sheet).

The health care team can help patients learn new ways to speak. It takes practice and patience to learn techniques such as *esophageal speech* or *tracheoesophageal puncture* speech, and not everyone is successful. How quickly a person learns, how understandable the speech is, and how natural the new voice sounds depend on the extent of the surgery on the larynx.

## Esophageal Speech

A speech pathologist can teach you how to force air into the top of your esophagus and then push it out again. The puff of air is like a burp. It vibrates the walls of the throat, making sound for the new voice. The tongue, lips, and teeth form words as the sound passes through the mouth.

This type of speech sounds low pitched and gruff, but it usually sounds more like a natural voice than speech made by a mechanical larynx. There is also no device to carry around, so your hands are free.

## Tracheoesophageal Puncture

For tracheoesophageal puncture (TEP), the surgeon makes an opening between the trachea and the esophagus. The opening is made at the time of initial surgery or later. A small plastic or silicone valve fits into this opening. The valve keeps food out of the trachea. After TEP, patients can cover their stoma with



a finger and force air into the esophagus through the valve. The air produces sound by making the walls of the throat vibrate. The sound is a lot like natural speech.

## Mechanical Speech

You may choose to use a mechanical larynx while you learn esophageal or TEP speech or if you are unable to use these methods. The device may be powered by batteries (*electrolarynx*) or by air (*pneumatic larynx*).

Many different mechanical devices are available. The speech pathologist will help you choose the best device for your needs and abilities and will train you to use it.

One kind of electrolarynx looks like a small flashlight. It makes a humming sound. You hold the device against your neck, and the sound travels through your neck to your mouth. Another type of electrolarynx has a flexible plastic tube that carries sound into your mouth from a hand-held device. There are also devices that are built into a denture or retainer and can be worn inside your mouth and operated by a hand-held remote control.

A pneumatic larynx is held over the stoma and uses air from the lungs instead of batteries to make it vibrate. The sound it makes travels to the mouth through a plastic tube.

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## Followup Care

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**F**ollowup care is important after treatment for cancer of the larynx. Regular checkups ensure that any changes in health are noted. Problems can be found and treated as soon as possible. The doctor will

check closely to be sure that the cancer has not returned. Checkups include exams of the stoma, neck, and throat. From time to time, the doctor may do a complete physical exam and take x-rays. If you had radiation therapy or a partial laryngectomy, the doctor will also examine you with a laryngoscope.

Treatments for laryngeal cancer can affect the thyroid. A blood test can tell if the thyroid is making enough *thyroid hormone*. If the level is low, you may need to take thyroid hormone pills.

People who have laryngeal cancer have a chance of developing a new cancer in the mouth, throat, or other areas of the head and neck. This is especially true for those who are smokers or drink alcohol heavily. Most doctors strongly urge their patients to stop smoking and drinking to cut down the risk of a new cancer and other health problems.

The NCI has prepared a booklet for people who have completed their treatment to help answer questions about followup care and other concerns. *Facing Forward Series: Life After Cancer Treatment* provides tips for getting the most out of medical visits. It describes the kinds of help people may need.

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## Support for People with Cancer of the Larynx

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**L**iving with a serious disease such as cancer is not easy. Some people find they need help coping with the emotional and practical aspects of their disease. Support groups can help. In these groups,

people living with cancer get together to share what they have learned about coping with the disease and the effects of treatment. People interested in finding a support group may want to talk with their health care provider for suggestions.

People living with cancer may worry about caring for their families, keeping their jobs, or continuing daily activities. Concerns about tests, treatments, hospital stays, and medical bills are also common. Doctors, nurses, and other members of the health care team can answer questions about treatment, working, or other activities. Meeting with a social worker, counselor, or member of the clergy can be helpful for those who want to talk about their feelings or discuss their concerns. Often, a social worker can suggest resources for help with rehabilitation, emotional support, financial aid, transportation, or home care.

The Cancer Information Service (1-800-4-CANCER) can provide printed materials on coping, as well as information to help patients and their families locate programs and services.

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## The Promise of Cancer Research

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**D**octors all over the country are conducting many types of clinical trials. These are research studies in which people take part voluntarily. Studies include new ways to treat cancer of the larynx. Research already has led to advances, and researchers continue to

search for more effective approaches.

People who join these studies have the first chance to benefit from treatments that have shown promise in earlier research. They also make an important contribution to medical science by helping doctors learn more about the disease. Although clinical trials may pose some risks, researchers take very careful steps to protect their patients.

People with laryngeal cancer are participating in several types of treatment studies:

- **Radiation therapy.** Researchers are studying a new approach to radiation therapy. Patients receive radiation three times a day, 5 days a week, for just over 2 weeks, instead of once a day for 5 to 7 weeks.
- **Drugs that reduce side effects.** Researchers are testing therapies that reduce the side effects of radiation therapy. They are testing drugs that may help patients maintain their weight or help lessen damage to the skin during radiation therapy.
- **Chemotherapy.** Scientists are studying drugs that kill cancer cells. These drugs are used alone or in combination with radiation therapy to spare the larynx from surgery.
- **Biological therapy.** Scientists are studying *monoclonal antibodies* that slow or stop the growth of cancer.

If you are interested in learning more about joining a clinical trial, you may want to talk with your doctor. You may want to read *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 booklets describe how research studies are carried out and explain their possible benefits and risks. NCI's

Web site includes a section on clinical trials at **[http://cancer.gov/clinical\\_trials](http://cancer.gov/clinical_trials)**. This section of the Web site provides general information about clinical trials. It also offers detailed information about specific ongoing studies of cancer of the larynx. The Cancer Information Service at 1-800-4-CANCER can answer questions and provide information from the NCI's database of clinical trials.

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 Dictionary
 

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**Asbestos** (as-BES-tus): A natural material that is made up of tiny fibers. The fibers can cause cancer.

**Benign** (beh-NINE): Not cancerous; does not invade nearby tissue or spread to other parts of the body.

**Biological therapy** (by-o-LAHJ-i-kul): Treatment to stimulate or restore the ability of the immune system to fight infection and disease. Also used to lessen side effects that may be caused by some cancer treatments. Also known as immunotherapy, biotherapy, or biological response modifier (BRM) therapy.

**Biopsy** (BY-op-see): The removal of cells or tissues for examination under a microscope. When only a sample of tissue is removed, the procedure is called an incisional biopsy or core biopsy. When an entire lump or suspicious area is removed, the procedure is called an excisional biopsy. When a sample of tissue or fluid is removed with a needle, the procedure is called a needle biopsy or fine-needle aspiration.

**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.

**Cartilage** (KAR-tih-lij): A tough, flexible tissue that lines joints and gives structure to the nose, ears, larynx, and other parts of the body.

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

**Chemotherapy** (kee-mo-THER-a-pee): Treatment with anticancer drugs.

**Clinical trial:** A type of research study that tests how well new medical treatments or other interventions work in people. Such studies test new methods of screening, prevention, diagnosis, or treatment of a disease. The study may be carried out in a clinic or other medical facility. Also called a clinical study.

**Cordectomy** (kor-DEK-toe-mee): An operation to remove one or both vocal cords.

**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.

**Electrolarynx** (e-LEK-tro-LAIR-inks): A battery-operated device that makes a humming sound. It is used to help a person talk after removal of the voicebox (laryngectomy).

**Epiglottis** (ep-ih-GLAH-tis): The flap that covers the trachea during swallowing so that food does not enter the lungs.

**Esophageal speech** (eh-SOF-a-JEE-al): Speech produced by trapping air in the esophagus and forcing it out again. It is used after the voice box (larynx) has been removed.

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

**Gastroesophageal reflux disease** (GAS-tro-eh-sof-a-JEE-al REE-flux diz-EEZ): Also called GERD. A common disorder whose main symptom is frequent or severe heartburn. The burning feeling occurs when stomach acid flows up into the esophagus.

**General anesthesia** (an-es-THÉE-zha): Drugs that cause loss of feeling or awareness and put the person to sleep.

**Glottis** (GLAH-tis): The middle part of the larynx; the area where the vocal cords are located.

**Head and neck cancer:** A group of cancers that arise in the head or neck region (in the nasal cavity, sinuses, lip, mouth, salivary glands, throat, or larynx).

**Hemilaryngectomy** (HEM-ee-LAIR-in-JEK-tuh-mee): An operation to remove part of the larynx.

**Humidifier** (hyoo-MID-ih-fye-er): A machine that puts moisture in the air.

**Intravenous** (in-tra-VEE-nus): IV. Within a blood vessel.

**Laryngeal** (lair-IN-jee-al): Having to do with the larynx.

**Laryngectomy** (LAIR-in-JEK-tuh-mee): An operation to remove all or part of the larynx (voice box).

**Laryngoscope** (la-RING-guh-skope): A thin, lighted tube used to examine the larynx (voice box).

**Laryngoscopy** (LAR-in-GOS-kuh-pee): Examination of the larynx (voice box) with a mirror (indirect laryngoscopy) or with a laryngoscope (direct laryngoscopy).

**Larynx** (LAIR-inks): The area of the throat containing the vocal cords and used for breathing, swallowing, and talking. Also called the voice box.

**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.

**Local anesthesia** (an-es-THEE-zha): Drugs that cause a temporary loss of feeling in one part of the body. The patient remains awake but cannot feel the part of the body treated with the anesthetic.

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



**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 known as a lymph gland.

**Lymph node dissection** (limf node dis-EK-shun): A surgical procedure in which lymph nodes are removed and examined to see whether they contain cancer. Also called lymphadenectomy.

**Lymphatic system** (lim-FAT-ik SIS-tem): The tissues and organs that produce, store, and carry white blood cells that fight infection 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). These tubes branch, like blood vessels, into all the tissues of the body.

**Magnetic resonance imaging** (mag-NET-ik REZ-o-nans IM-a-jing): MRI. A procedure in which a magnet linked to a computer is used to create detailed pictures of areas inside the body. Also called nuclear magnetic resonance imaging.

**Malignant** (ma-LIG-nant): Cancerous; a growth with a tendency to invade and destroy nearby tissue and spread to other parts of the body.

**Medical oncologist** (on-KOL-o-jist): A doctor who specializes in diagnosing and treating cancer using chemotherapy, hormonal therapy, and biological therapy. A medical oncologist often is the main caretaker of someone who has cancer and coordinates treatment provided by other specialists.

**Metastasis** (meh-TAS-ta-sis): The spread of cancer from one part of the body to another. Tumors formed from cells that have spread are called “secondary tumors” and contain cells that are like those in the original (primary) tumor. The plural is metastases (meh-TAS-ta-seez).

**Monoclonal antibodies** (MAH-no-KLO-nul AN-tih-BAH-deez): Laboratory-produced substances that can locate and bind to cancer cells wherever they are in the body. Many monoclonal antibodies are used in cancer detection or therapy; each one recognizes a different protein on certain cancer cells. Monoclonal antibodies can be used alone, or they can be used to deliver drugs, toxins, or radioactive material directly to a tumor.

**Nodule** (NOD-yool): A growth or lump that may be cancerous or noncancerous.

**Nutritionist**: A health professional with special training in nutrition who can offer help with the choice of foods a person eats and drinks. Also called a dietitian.

**Organ**: A part of the body that is made of cells and tissues and that performs specific functions. For example, the heart is an organ.

**Otolaryngologist** (OAT-oh-LAR-in-GOL-uh-jist): A doctor who specializes in treating diseases of the ear, nose, and throat. Also called an ENT doctor.

**Partial laryngectomy** (PAR-shul lair-in-JEK-toe-mee): An operation to remove part of the larynx (voice box).

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

**Physical therapy**: The use of exercises and physical activities to help condition muscles and restore strength and movement. For example, physical therapy can be used to restore arm and shoulder movement and build back strength after breast cancer surgery.

**Pneumatic larynx** (noo-MAT-ik LAIR-inks): A device that uses air to produce a humming sound. It is used to help a person talk after a laryngectomy.

**Polyp** (POL-ip): A growth that protrudes from a mucous membrane.

**Primary tumor:** The original tumor.

**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): 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-beam radiation therapy), or from materials called radioisotopes. Radioisotopes produce radiation and can be placed in or near the tumor or in the area near cancer cells. This type of radiation treatment is called internal radiation therapy, implant radiation, interstitial radiation, or brachytherapy. Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. Also called radiotherapy, irradiation, and x-ray therapy.

**Saliva** (suh-LIE-vuh): The watery fluid in the mouth. It moistens food to aid in digestion.

**Scalpel** (SKAL-pul): A small, thin knife used for surgery.

**Side effects:** Problems that occur when treatment affects healthy cells or tissues. Common side effects of cancer treatment are fatigue, pain, nausea, vomiting, decreased blood cell counts, hair loss, and mouth sores.

**Speech pathologist** (pa-THOL-o-jist): A specialist who evaluates and treats people with communication and swallowing problems. Also called a speech therapist.

**Sputum** (SPYOO-tum): Mucus that collects in the lungs. It is brought up from the lungs by coughing.

**Squamous cell carcinoma** (SKWAY-mus sel kar-sin-O-ma): 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.

**Squamous cells** (SKWAY-mus): Flat cells that look like fish scales under a microscope. These cells cover internal and external surfaces of the body.

**Stage:** The extent of a cancer within the body, especially whether the disease has spread from the original site to other parts of the body.

**Staging** (STAY-jing): Performing exams and tests to learn the extent of the cancer within the body, especially whether the disease has spread from the original site to other parts of the body. It is important to know the stage of the disease in order to plan the best treatment.

**Stoma** (STO-ma): A surgically created opening from an area inside the body to the outside.

**Subglottis** (SUB-glot-is): The lowest part of the larynx; the area from just below the vocal cords down to the top of the trachea.

**Supraglottic laryngectomy** (SOO-pra-GLOT-ik lair-in-JEK-toe-mee): An operation that removes the supraglottis.

**Supraglottis** (SOO-pra-GLOT-is): The upper part of the larynx (voice box), including the epiglottis; the area above the vocal cords.

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

**Surgery** (SERJ-uh-ree): An operation done by a surgeon to remove or repair a part of the body. Surgery also may be done to find out whether disease is present.

**Thyroid** (THIGH-royd): A gland located beneath the voice box (larynx) that produces thyroid hormone. The thyroid helps regulate growth and metabolism.

**Thyroid hormone:** The thyroid gland makes T3 (tri-iodothyronine) and T4 (thyroxine), which together are considered thyroid hormone. T3 and T4 have identical effects on cells. Thyroid hormone affects heart rate, blood pressure, body temperature, and weight. T3 and T4 are stored as thyroglobulin, which can be converted back into T3 and T4.

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

**Total laryngectomy** (LAIR-in-JEK-tuh-mee): An operation to remove all of the larynx (voice box).

**Trachea** (TRAY-kee-uh): The airway that leads from the larynx to the lungs. Also called the windpipe.

**Tracheoesophageal puncture** (TRAY-kee-o-eh-SOF-uh-JEE-al PUNK-chur): A small opening made by a surgeon between the esophagus and the trachea. A valve keeps food out of the trachea but lets air into the esophagus for esophageal speech.

**Tracheostomy** (TRAY-kee-AHS-toe-mee): Surgery to create an opening (stoma) into the windpipe. The opening itself may also be called a tracheostomy.

**Tracheostomy tube** (TRAY-kee-AHS-toe-mee toob): A 2-inch- to 3-inch-long curved metal or plastic tube placed in a surgically created opening (tracheostomy) in the windpipe to keep it open. Also called a trach (“trake”) tube.

***Tumor*** (TOO-mer): An abnormal mass of tissue that results from excessive cell division. Tumors perform no useful body function. They may be benign (not cancerous) or malignant (cancerous).

***Virus*** (VYE-rus): A microorganism that can infect cells and cause disease.

***Vocal cords*** (VOH-kul kordz): Two small bands of muscle within the larynx that vibrate to produce the voice.

***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.

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## National Cancer Institute Information Resources

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**Y**ou may want more information for yourself, your family, and your doctor. The following National Cancer Institute (NCI) services are available to help you.

### Telephone

#### *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 understandable language and respond in English, Spanish, or on TTY equipment.

Toll-free: 1-800-4-CANCER (1-800-422-6237)

TTY: 1-800-332-8615

### Internet

#### **<http://cancer.gov>**

The NCI's Cancer.gov™ Web site provides information from numerous NCI sources. It offers current information on cancer prevention, screening, diagnosis, treatment, genetics, supportive care, and ongoing clinical trials. It also provides information about NCI's research programs and funding opportunities, cancer statistics, and the Institute itself. Cancer.gov can be accessed at **<http://cancer.gov>** on the Internet.

Cancer.gov also offers live, online assistance through LiveHelp. Information specialists are available Monday through Friday from 9:00 AM to 10:00 PM Eastern Time. LiveHelp is at **<http://cancer.gov>** on the Internet.

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## National Cancer Institute Booklets

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**N**ational Cancer Institute (NCI) publications can be ordered by writing to the address below, and some can be viewed and downloaded from **<http://cancer.gov/publications>** on the Internet.

Publications Ordering Service  
National Cancer Institute  
Suite 3036A  
6116 Executive Boulevard, MSC 8322  
Bethesda, MD 20892–8322

In addition, people in the United States and its territories may order these and other NCI booklets by calling the Cancer Information Service at 1–800–4–CANCER. They may also order many NCI publications on-line at **<http://cancer.gov/publications>**.

### **Booklets About Cancer Treatment**

- *Chemotherapy and You: A Guide to Self-Help During Treatment*
- *Helping Yourself During Chemotherapy: 4 Steps for Patients*
- *Radiation Therapy and You: A Guide to Self-Help During Treatment*
- *Eating Hints for Cancer Patients*
- *Understanding Cancer Pain*
- *Pain Control: A Guide for People with Cancer and Their Families*
- *Get Relief From Cancer Pain*
- *If You Have Cancer...What You Should Know About Clinical Trials*
- *Taking Part in Clinical Trials: What Cancer Patients Need To Know*



- *La quimioterapia y usted: Una guía de autoayuda durante el tratamiento del cáncer (Chemotherapy and You: A Guide to Self-Help During Treatment for Cancer)*
- *El dolor relacionado con el cáncer (Understanding Cancer Pain)*
- *La radioterapia y usted: Una guía de autoayuda durante el tratamiento del cáncer (Radiation Therapy and You: A Guide to Self-Help During Treatment)*
- *La participación en los estudios clínicos: Lo que los pacientes de cáncer deben saber (Taking Part in Clinical Trials: What Cancer Patients Need To Know)*
- *Si tiene cáncer...lo que debería saber sobre estudios clínicos (If You Have Cancer...What You Should Know About Clinical Trials)*

### **Booklets About Living With Cancer**

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

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