

Second Edition

**FREE** take one

# HEAD & NECK CANCER

A TREATMENT GUIDE FOR  
PATIENTS AND THEIR FAMILIES

WHERE  
INFORMATION  
EQUALS HOPE

  
CONTENT  
REVIEWED BY  
A DISTINGUISHED  
MEDICAL  
ADVISORY  
BOARD

For certain patients with head and neck squamous cell cancer

# HELP FIGHT HEAD & NECK CANCER WITH YOUR IMMUNE SYSTEM.

KEYTRUDA is a medicine that may treat certain cancers by working with your immune system. KEYTRUDA can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become serious or life-threatening and can lead to death.

## KEYTRUDA is the first immunotherapy approved by the FDA to treat certain patients with HNSCC.

KEYTRUDA is a prescription medicine used to treat a kind of cancer called head and neck squamous cell cancer (HNSCC). KEYTRUDA may be used when your HNSCC has returned or spread **and** you have received chemotherapy that contains platinum, and it did not work or is no longer working.

### IMPORTANT SAFETY INFORMATION

Call or see your doctor right away if you develop any symptoms of the following problems or these symptoms get worse:

- **Lung problems (pneumonitis).** Symptoms of pneumonitis may include shortness of breath, chest pain, or new or worse cough.
- **Intestinal problems (colitis) that can lead to tears or holes in your intestine.** Signs and symptoms of colitis may include diarrhea or more bowel movements than usual; stools that are black, tarry, sticky, or have blood or mucus; or severe stomach-area (abdomen) pain or tenderness.
- **Liver problems (hepatitis).** Signs and symptoms of hepatitis may include yellowing of your skin or the whites of your eyes, nausea or vomiting, pain on the right side of your stomach area (abdomen), dark urine, feeling less hungry than usual, or bleeding or bruising more easily than normal.
- **Hormone gland problems (especially the thyroid, pituitary, adrenal glands, and pancreas).** Signs and symptoms that your hormone glands are not working properly may include rapid heartbeat, weight loss or weight gain, increased sweating, feeling more hungry or thirsty, urinating more often than usual, hair loss, feeling cold, constipation, your voice gets deeper, muscle aches, dizziness or fainting, or headaches that will not go away or unusual headache.
- **Kidney problems, including nephritis and kidney failure.**

Signs of kidney problems may include change in the amount or color of your urine.

- **Skin problems.** Signs of skin problems may include rash, itching, blisters, peeling or skin sores, or painful sores or ulcers in your mouth or in your nose, throat, or genital area.
- **Problems in other organs.** Signs of these problems may include changes in eyesight, severe or persistent muscle or joint pains, severe muscle weakness, low red blood cells (anemia), shortness of breath, irregular heartbeat, feeling tired, or chest pain (myocarditis).
- **Infusion (IV) reactions that can sometimes be severe and life-threatening.** Signs and symptoms of infusion reactions may include chills or shaking, shortness of breath or wheezing, itching or rash, flushing, dizziness, fever, or feeling like passing out.
- **Rejection of a transplanted organ.** People who have had an organ transplant may have an increased risk of organ transplant rejection if they are treated with KEYTRUDA.

**Getting medical treatment right away may help keep these problems from becoming more serious.** Your doctor will check you for these problems during treatment with KEYTRUDA. Your doctor may treat you with corticosteroid or hormone replacement medicines. Your doctor may also need to delay or completely stop treatment with KEYTRUDA if you have severe side effects.

*Important Safety Information is continued on the next page.*



**IT'S TRU.**

**KEYTRUDA**<sup>®</sup>  
(pembrolizumab) Injection 100 mg

Learn more at [keytruda.com](http://keytruda.com).

**KEYTRUDA has been shown to help shrink tumors  
in some patients with HNSCC.**

**IMPORTANT SAFETY INFORMATION (continued)**

**Before you receive KEYTRUDA, tell your doctor if you** have immune system problems such as Crohn's disease, ulcerative colitis, or lupus; have had an organ transplant; have lung or breathing problems; have liver problems; or have any other medical problems. If you are pregnant or plan to become pregnant, tell your doctor. KEYTRUDA can harm your unborn baby. Females who are able to become pregnant should use an effective method of birth control during treatment and for at least 4 months after the final dose of KEYTRUDA. Tell your doctor right away if you become pregnant during treatment with KEYTRUDA.

If you are breastfeeding or plan to breastfeed, tell your doctor. It is not known if KEYTRUDA passes into your breast milk.

Do not breastfeed during treatment with KEYTRUDA and for 4 months after your final dose of KEYTRUDA.

**Tell your doctor about all the medicines you take**, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

Common side effects of KEYTRUDA include feeling tired, itching, diarrhea, decreased appetite, rash, fever, cough, shortness of breath, pain in muscles, bones or joints, constipation, and nausea.

These are not all the possible side effects of KEYTRUDA. Tell your doctor if you have any side effect that bothers you or that does not go away. For more information, ask your doctor or pharmacist.

Please read the adjacent Medication Guide for KEYTRUDA and discuss it with your doctor.

**Ask your doctor or health care professional about KEYTRUDA, or call 85-KEYTRUDA (855-398-7832). Available for use with an assistive device or service.**

You are encouraged to report negative side effects of prescription drugs to the FDA. Visit [www.fda.gov/medwatch](http://www.fda.gov/medwatch) or call 1-800-FDA-1088.

Having trouble paying for your Merck medicine?  
**Merck may be able to help. [www.merckhelps.com](http://www.merckhelps.com)**

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## MEDICATION GUIDE

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### KEYTRUDA® (key-true-duh) (pembrolizumab) for injection

### KEYTRUDA® (key-true-duh) (pembrolizumab) injection

#### What is the most important information I should know about KEYTRUDA?

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KEYTRUDA is a medicine that may treat certain cancers by working with your immune system. KEYTRUDA can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become serious or life-threatening and can lead to death.

**Call or see your doctor right away if you develop any symptoms of the following problems or these symptoms get worse:**

**Lung problems (pneumonitis).** Symptoms of pneumonitis may include:

- shortness of breath
- chest pain
- new or worse cough

**Intestinal problems (colitis) that can lead to tears or holes in your intestine.** Signs and symptoms of colitis may include:

- diarrhea or more bowel movements than usual
- stools that are black, tarry, sticky, or have blood or mucus
- severe stomach-area (abdomen) pain or tenderness

**Liver problems (hepatitis).** Signs and symptoms of hepatitis may include:

- yellowing of your skin or the whites of your eyes
- nausea or vomiting
- pain on the right side of your stomach area (abdomen)
- dark urine
- feeling less hungry than usual
- bleeding or bruising more easily than normal

**Hormone gland problems (especially the thyroid, pituitary, adrenal glands, and pancreas).** Signs and symptoms that your hormone glands are not working properly may include:

- rapid heart beat
- feeling more hungry or thirsty
- feeling cold
- muscle aches
- weight loss or weight gain
- urinating more often than usual
- constipation
- dizziness or fainting
- increased sweating
- hair loss
- your voice gets deeper
- headaches that will not go away or unusual headache

**Kidney problems, including nephritis and kidney failure.** Signs of kidney problems may include:

- change in the amount or color of your urine

**Skin problems.** Signs of skin problems may include:

- rash
- itching
- blisters, peeling or skin sores
- painful sores or ulcers in your mouth or in your nose, throat, or genital area

**Problems in other organs.** Signs of these problems may include:

- changes in eyesight
- severe or persistent muscle or joint pains
- severe muscle weakness
- low red blood cells (anemia)
- shortness of breath, irregular heartbeat, feeling tired, or chest pain (myocarditis)

**Infusion (IV) reactions, that can sometimes be severe and life-threatening.** Signs and symptoms of infusion reactions may include:

- chills or shaking
- itching or rash
- dizziness
- feeling like passing out
- shortness of breath or wheezing
- flushing
- fever

**Rejection of a transplanted organ.** People who have had an organ transplant may have an increased risk of organ transplant rejection if they are treated with KEYTRUDA. Your doctor should tell you what signs and symptoms you should report and monitor you, depending on the type of organ transplant that you have had.

**Complications of stem cell transplantation that uses donor stem cells (allogeneic) after treatment with KEYTRUDA.** These complications can be severe and can lead to death. Your doctor will monitor you for signs of complications if you are an allogeneic stem cell transplant recipient.

**Getting medical treatment right away may help keep these problems from becoming more serious.** Your doctor will check you for these problems during treatment with KEYTRUDA. Your doctor may treat you with corticosteroid or hormone replacement medicines. Your doctor may also need to delay or completely stop treatment with KEYTRUDA, if you have severe side effects.

#### What is KEYTRUDA?

---

KEYTRUDA is a prescription medicine used to treat:

- a kind of skin cancer called melanoma that has spread or cannot be removed by surgery (advanced melanoma).
- a kind of lung cancer called non-small cell lung cancer (NSCLC).
  - KEYTRUDA may be used alone when your lung cancer:
    - has spread (advanced NSCLC) **and**,
    - tests positive for “PD-L1” **and**,
      - as your first treatment if you have not received chemotherapy to treat your advanced NSCLC and your tumor does not have an abnormal “EGFR” or “ALK” gene,
  - or**
  - you have received chemotherapy that contains platinum to treat your advanced NSCLC, and it did not work or it is no longer working, **and**
  - if your tumor has an abnormal “EGFR” or “ALK” gene, you have also received an EGFR or ALK inhibitor medicine and it did not work or is no longer working.
- KEYTRUDA may be used with the chemotherapy medicines pemetrexed and carboplatin as your first treatment when your lung cancer:
  - has spread (advanced NSCLC) **and**
  - is a type of lung cancer called “nonsquamous”.
- a kind of cancer called head and neck squamous cell cancer (HNSCC) that:
  - has returned or spread **and**
  - you have received chemotherapy that contains platinum and it did not work or is no longer working.

- a kind of cancer called classical Hodgkin lymphoma (cHL) in adults and children when:
  - you have tried a treatment and it did not work **or**
  - your cHL has returned after you received 3 or more types of treatment.
- a kind of bladder and urinary tract cancer called urothelial carcinoma. KEYTRUDA may be used when your bladder or urinary tract cancer:
  - has spread or cannot be removed by surgery (advanced urothelial cancer) **and**,
  - you are not able to receive chemotherapy that contains a medicine called cisplatin, **or**
  - you have received chemotherapy that contains platinum, and it did not work or is no longer working.
- a kind of cancer that is shown by a laboratory test to be a microsatellite instability-high (MSI-H) or a mismatch repair deficient (dMMR) solid tumor. KEYTRUDA may be used in adults and children to treat:
  - cancer that has spread or cannot be removed by surgery (advanced cancer), **and**
  - has progressed following treatment, and you have no satisfactory treatment options, **or**
  - you have colon or rectal cancer, and you have received chemotherapy with fluoropyrimidine, oxaliplatin, and irinotecan but it did not work or is no longer working.

It is not known if KEYTRUDA is safe and effective in children with MSI-H cancers of the brain or spinal cord (central nervous system cancers).

## What should I tell my doctor before receiving KEYTRUDA?

### Before you receive KEYTRUDA, tell your doctor if you:

- have immune system problems such as Crohn's disease, ulcerative colitis, or lupus
- have had an organ transplant
- have lung or breathing problems
- have liver problems
- have any other medical problems
- are pregnant or plan to become pregnant
  - KEYTRUDA can harm your unborn baby.
  - Females who are able to become pregnant should use an effective method of birth control during and for at least 4 months after the final dose of KEYTRUDA. Talk to your doctor about birth control methods that you can use during this time.
  - Tell your doctor right away if you become pregnant during treatment with KEYTRUDA.
- are breastfeeding or plan to breastfeed.
  - It is not known if KEYTRUDA passes into your breast milk.
  - Do not breastfeed during treatment with KEYTRUDA and for 4 months after your final dose of KEYTRUDA.

**Tell your doctor about all the medicines you take**, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

Know the medicines you take. Keep a list of them to show your doctor and pharmacist when you get a new medicine.

### How will I receive KEYTRUDA?

- Your doctor will give you KEYTRUDA into your vein through an intravenous (IV) line over 30 minutes.
- KEYTRUDA is usually given every 3 weeks.
- Your doctor will decide how many treatments you need.
- Your doctor will do blood tests to check you for side effects.
- If you miss any appointments, call your doctor as soon as possible to reschedule your appointment.

### What are the possible side effects of KEYTRUDA?

**KEYTRUDA can cause serious side effects. See "What is the most important information I should know about KEYTRUDA?"**

Common side effects of KEYTRUDA when used alone include: feeling tired, itching, diarrhea, decreased appetite, rash, fever, cough, shortness of breath, pain in muscles, bones or joints, constipation, and nausea.

In children, feeling tired, vomiting and stomach-area (abdominal) pain, and increased levels of liver enzymes and decreased levels of salt (sodium) in the blood are more common than in adults.

These are not all the possible side effects of KEYTRUDA. For more information, ask your doctor or pharmacist.

Tell your doctor if you have any side effect that bothers you or that does not go away.

Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

### General information about the safe and effective use of KEYTRUDA

Medicines are sometimes prescribed for purposes other than those listed in a Medication Guide. If you would like more information about KEYTRUDA, talk with your doctor. You can ask your doctor or nurse for information about KEYTRUDA that is written for healthcare professionals. For more information, go to [www.keytruda.com](http://www.keytruda.com).

### What are the ingredients in KEYTRUDA?

**Active ingredient:** pembrolizumab

**Inactive ingredients:**

KEYTRUDA for injection: L-histidine, polysorbate 80, and sucrose. May contain hydrochloric acid/sodium hydroxide.

KEYTRUDA injection: L-histidine, polysorbate 80, sucrose, and Water for Injection, USP.

Manufactured by: Merck Sharp & Dohme Corp., a subsidiary of **MERCK & CO., INC.**, Whitehouse Station, NJ 08889, USA

For KEYTRUDA for injection, at: MSD International GmbH, County Cork, Ireland

For KEYTRUDA injection, at: MSD Ireland (Carlow), County Carlow, Ireland

U.S. License No. 0002

For patent information: [www.merck.com/product/patent/home.html](http://www.merck.com/product/patent/home.html)

usmg-mk3475-iv-1707r011

Revised: July 2017

This Medication Guide has been approved by the U.S. Food and Drug Administration.

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*I'm tenacious about getting good care and taking good care of myself.*

~ Kris Matthews  
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## OVERVIEW

▲ **Head and neck cancer** describes a variety of malignant tumors that affect the mouth, pharynx (throat), larynx (voice box), sinuses, nose, salivary glands and thyroid (see Figure 1). Most of these cancers begin in the squamous cells, or the thin cells that line the moist tissues inside of the nose, mouth and throat. Other cancers form in the cells of the thyroid and salivary glands.

To better understand head and neck cancer, it helps to have a general understanding of cancer. Cells are the basic units of the body, and normal cells grow, divide and die in a predictable way. Cancer cells, however, are abnormal cells that grow and divide out of control quickly. When these cells continue to multiply, even when the body does not need new cells, they form a disorganized mass composed of billions of cells, called a tumor. A tumor may or may not have the ability to spread to other parts of the body. Tumors that do not spread are called benign and those that have the ability to spread are malignant. A malignant tumor is called cancer.

### DIAGNOSIS AND STAGING

At the first sign of a head and neck cancer, doctors usually recommend testing to define the disease and to evaluate how advanced it is. Your doctor will perform a thorough physical exam, which will likely include questions about your personal medical history, your

family history of disease and any risk factors you might have. In addition, diagnostic tests or procedures will help your doctor learn more about your specific cancer.

After head and neck cancer is diagnosed, your doctor will assign it a stage. Staging is a process that takes into account the size, location and whether (and where) the cancer has spread, such as to nearby lymph nodes or tissues or to other parts of the body. These factors are used to categorize the cancer and help your doctor develop a personalized treatment plan.

Certain cancers may be staged twice, using a clinical stage and a pathologic stage. The clinical stage is based on the results of the physical exam and imaging tests. If you have surgery for your cancer, a pathologist will then determine the pathologic stage, which is based on examination of tissue specimens removed during surgery.

The TNM staging system, developed by the American Joint Committee on Cancer (AJCC), is typically used to stage head and neck cancers. This system classifies the cancer by tumor (T), node (N) and metastasis (M). The T category describes the size and location of the primary tumor. The N category describes lymph node involvement, indicating whether the lymph nodes show evidence of cancer cells. The location of these lymph nodes is important because it shows how far the disease has spread. After surgery, the pathologist determines the pathologic N stage (sometimes denoted as pN), which describes how many lymph nodes are involved and the amount of tumor found in the nodes. The M



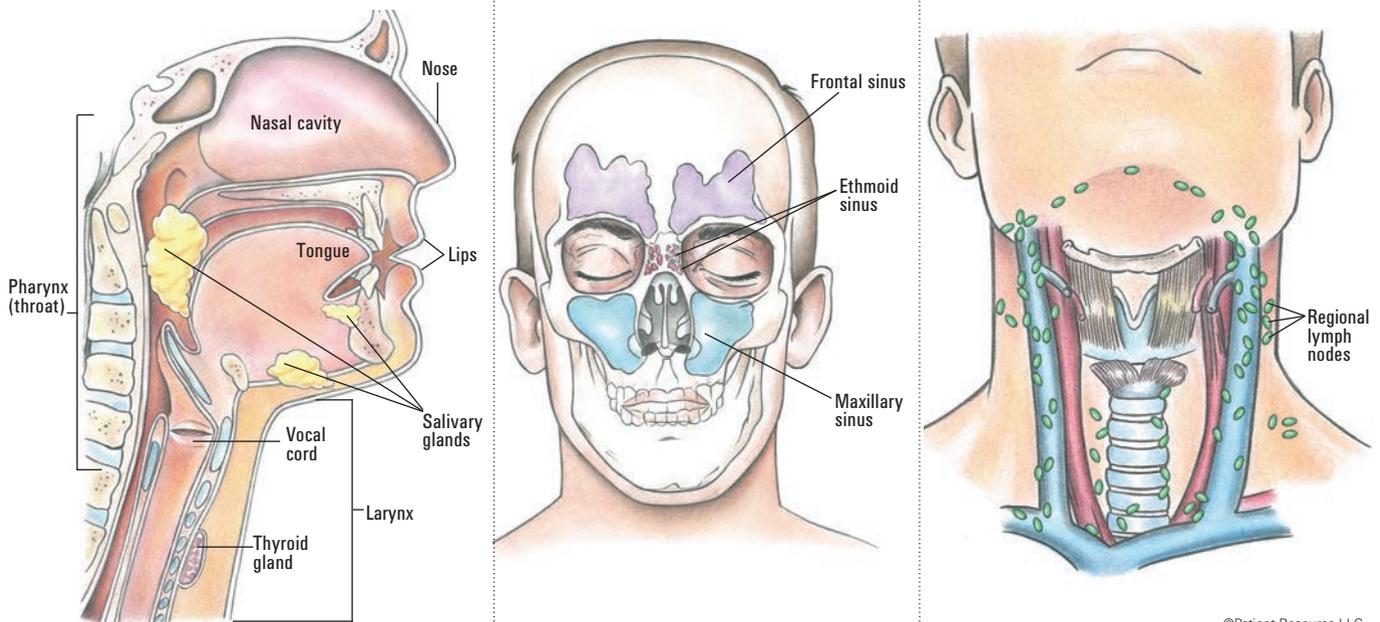
## SOME COMMON HEAD AND NECK CANCER DRUGS

- ▶ bleomycin sulfate (Blenoxane)
- ▶ cabozantinib (Cometriq)
- ▶ cetuximab (Erbix)
- ▶ cisplatin (Platinol)
- ▶ docetaxel (Taxotere)
- ▶ doxorubicin hydrochloride (Adriamycin)
- ▶ hydroxyurea (Hydrea)
- ▶ lenvatinib (Lenvima)
- ▶ methotrexate sodium (Methotrexate LPF)
- ▶ nivolumab (Opdivo)
- ▶ pembrolizumab (Keytruda)
- ▶ sorafenib tosylate (Nexavar)
- ▶ vandetanib (Caprelsa)

category describes metastasis (spread of cancer to another part of the body), if any. Staging for the M category is mainly clinical; however, an M subcategory may be given based on the presence of tumor cells that can only be detected using a microscope or molecular testing.

Once the cancer is classified, an overall stage is assigned. Head and neck cancers are commonly staged as Stage 0 through Stage IV. Stage 0 (also known as “in situ”) is a precursor of an invasive cancer. Stages I and II are confined to the local area where the cancer is found, and Stage III has spread to the regional lymph nodes in the neck. Stage IV can further be divided into Stages IVA, IVB and IVC. Stage IVA and Stage IVB are locally or regionally advanced disease, and Stage IVC has spread to distant sites, such as the lung or bone.

**FIGURE 1**  
▲ AREAS THAT CAN BE AFFECTED BY HEAD AND NECK CANCER



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## OVERVIEW

### PHYSICAL AND EMOTIONAL CHANGES

The areas affected by head and neck cancer treatment control some of your most vital functions, including breathing, swallowing, chewing and speaking. As a result, treating head and neck cancer requires more than removing a tumor and killing cancer cells. It also includes repairing areas of your body to preserve those vital functions as much as possible.

### RADIATION THERAPY THERMOPLASTIC MASK

**Certain precautions are necessary to ensure your safety during radiation treatments because the radiation must target the same spot every time. To make sure you are placed in exactly the same position for each treatment session, body molds or other immobilizing devices may be necessary. A special mesh head mask, called a thermoplastic mask, may be created from a mold of your face and head. In most cases, semi-permanent marks or permanent tattoos may be placed on your skin to indicate the exact location the radiation beams must hit to reach the tumor.**

**Wearing the mask and being unable to move can be traumatic, especially if you suffer from claustrophobia. Your treatment team will help make you as comfortable as possible, so tell them if you feel anxious. They will work with you to find a position you are comfortable with during every treatment. If necessary, your doctor may prescribe medication to ease anxiety and help you relax for your treatments.**

**In addition, ask your doctor about medications you can take before and during treatment to help minimize the long-term oral side effects of radiation therapy.**



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The size and location of a tumor often makes reconstructive surgery a necessity. If the tumor is small, the surgeon may be able to remove it without damaging too much tissue or bone. If the tumor is large, a reconstructive surgeon may be called in to help rebuild the damaged body part. For example, treatment for cancer that has invaded the mandible, or jawbone, may require surgery to remove part of the jaw. A reconstructive surgeon may be able to remove and reshape bone from your leg or arm into a new jawbone. Along with helping to restore appearance, reconstruction of the jawbone restores function, such as chewing and swallowing, and can provide a comfortable bite for your top and bottom teeth. In addition, the new jawbone prevents that side of your face from sinking in without a bone to provide support (see *Reconstructive Surgery*, page 23).

### ORAL SIDE EFFECTS

Most people are aware of common side effects of cancer treatment, such as alopecia (hair loss) and nausea, but many don't realize how common it is for complications that affect the mouth to develop. These problems may interfere with your cancer treatment and worsen your quality of life. Treatments for head and neck cancers, such as radiation therapy, surgery and chemotherapy, can cause oral problems ranging from dry mouth to life-threatening infections. It is crucial to have a dentist as part of your treatment team who is aware of your situation and is able to monitor you closely during and after treatment. Contact your treatment team when you first notice a mouth problem, if an existing problem gets worse or if you notice any changes that concern you (see *Dental and Oral Side Effects*, page 24). Immunotherapy and targeted therapy, newer options to treat head and neck cancers, are associated with different types of side effects. You can learn more about these side effects on page 25.

### YOUR TREATMENT TEAM

A variety of specialists will work together to treat the physical and emotional aspects of your head and neck cancer. Your team may include the following:

- An otolaryngologist, a doctor who specializes in certain diseases of the head and neck (also known as an ear, nose, and throat, or ENT, doctor)
- A head and neck cancer surgeon and a facial plastic (reconstructive) surgeon
- A neurosurgeon, a doctor who specializes

in surgery on the brain, spine and other parts of the nervous system

- A radiation oncologist, a doctor who specializes in treating cancer with radiation therapy
- A medical oncologist, a doctor who specializes in treating cancer with medicines, such as chemotherapy or immunotherapy
- An oral surgeon and a dentist to perform dental surgery and manage dental side effects
- A speech and language pathologist to work with you to improve vital functions, such as speech and swallowing
- A psychiatrist, psychologist or therapist

A nutritionist and a rehabilitation specialist may also be on your team.

### REDUCING YOUR RISK

Due to the increased chance of developing another primary cancer, understanding the risk factors for head and neck cancer is important. Risk factors include poor dental hygiene, smoking cigarettes, chewing tobacco and drinking excessive amounts of alcohol. Many head and neck cancers are linked to tobacco and alcohol use, and the risk of head and neck cancer is higher for people who use both tobacco and alcohol than for people who use only one or the other.

Another risk factor is human papillomavirus (HPV), which is particularly associated with cancers of the oropharynx (back of the throat), which includes the tonsils and base of tongue. In addition, prolonged exposure to the sun has been linked to cancer of the lip.

### LEARN MORE

This guide provides information on six types of head and neck cancer, from diagnosis and staging information to treatment options, support resources and clinical trials. ■

### ADDITIONAL RESOURCES

- ▶ **American Cancer Society:** [www.cancer.org](http://www.cancer.org)  
*If You Have Head or Neck Cancer*
- ▶ **Head and Neck Cancer Alliance:** [www.headandneck.org](http://www.headandneck.org)  
*Head and Neck Cancer*
- ▶ **HNC Living Foundation:** [www.hncliving.org](http://www.hncliving.org)  
*Resources*
- ▶ **National Cancer Institute:** [www.cancer.gov](http://www.cancer.gov)  
*Head and Neck Cancers*
- ▶ **Support for People with Oral and Head and Neck Cancer:** [www.spohnc.org](http://www.spohnc.org)

# THYROID CANCER

▲ **Cancer of the thyroid gland** is an abnormal growth of cells in the butterfly-shaped gland located in the lower neck (see Figure 1). The thyroid gland produces hormones that control heart rate, body temperature and metabolism (how quickly food is changed into energy). The four parathyroid glands, which sit on the back of the thyroid, also control the amount of calcium in the blood.

A variety of nodules may develop in the thyroid, some cancerous (malignant), others noncancerous (benign). The primary types of thyroid cancer include papillary carcinoma (the most common), follicular carcinoma, medullary thyroid carcinoma and anaplastic carcinoma. Though it is rare, lymphoma can also occur in the thyroid. Cancerous tumors can metastasize (spread) into nearby tissues and organs or to other parts of the body if left untreated.

## DIAGNOSING THYROID CANCER

Your doctor may suspect thyroid cancer if he or she feels any lumps, swelling or enlarged lymph nodes in the neck. If thyroid cancer is suspected, tests will be done to confirm the diagnosis.

## STAGING

Staging is how doctors determine the extent of your cancer, where it is located, and whether it has spread to nearby organs or tissue or to other parts of your body. For thyroid cancer, the TNM (tumor, node, metastasis) classification relates to specific stages depending on the specific type of thyroid cancer. Medullary thyroid cancer is staged from Stage I to Stage IVC. In papillary and follicular thyroid cancers, age is a factor in staging. Disease in people younger than 45 years is diagnosed as either Stage I or II. Disease in people 45 years or older can be staged from Stage I to IVC. All anaplastic cancers are classified as Stage IV because they are a very aggressive type of thyroid cancer (see page 8).

## TREATMENT OPTIONS

Your doctor will consider many factors when exploring treatment options, including the stage of disease, the location and size of the tumor and your overall health status. Your doctor will also focus on preserving (as much as possible) the ability to talk, eat and breathe normally. Treatment options also depend on

whether the thyroid cancer is primary or recurrent. The most common treatment options for thyroid cancer are surgery, radioactive iodine treatment and radiation therapy. Other treatments include chemotherapy, targeted therapy and immunotherapy. You should talk to your health care team about the goal of treatment — whether the goal is to cure the cancer or to keep the cancer under control and relieve symptoms. Understanding the goal, as well as the benefits and risks of each option, will help you become better informed for making shared treatment decisions with your doctor.

### Surgery

Surgery to remove all or most of the thyroid gland is the most common treatment for thyroid cancer. In addition to removing the thyroid, your surgeon may also remove lymph nodes in the neck to see if the cancer has spread beyond the thyroid. In some low-risk patients, only half of the thyroid needs to be removed; this procedure is called hemithyroidectomy. If the entire thyroid gland is removed, thyroid hormone can no longer be produced in the body. This means that medication must be taken as a replacement for the hormone. This treatment, which can be taken as a pill, is known as thyroid hormone therapy.

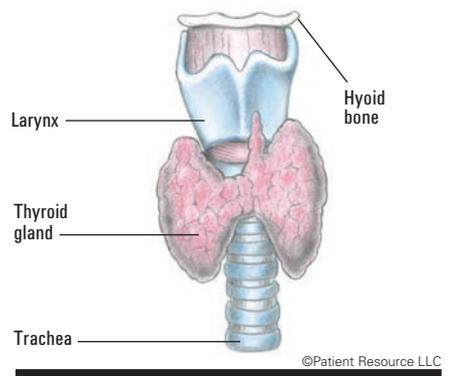
### Radioactive iodine treatment

Radioactive iodine treatment involves giving radioactive iodine (I-131) in liquid or pill form. Because the thyroid gland absorbs iodine, the radioactive iodine will concentrate in the thyroid gland, and the radiation will kill the cancer cells. This treatment is standard of care for papillary or follicular thyroid cancer that has spread to lymph nodes in the neck or other parts of the body. Radioactive iodine treatment may also be used after surgery if part of the thyroid gland remains.

### Radiation therapy

Radiation therapy is sometimes recommended if the cancer has spread to the bones and after surgery if all of the cancer could not be removed. This treatment is more often used as part of treatment for medullary and anaplastic thyroid cancer. With this type of treatment, known as external-beam radiation therapy, a machine delivers high-energy beams of radiation, usually X-rays or gamma rays, at specific points of the body to destroy cancer cells. Radiation therapy is usually given for about six weeks, once a day for 15 to 30 minutes, five days a week.

**FIGURE 1**  
▲ **THYROID**



### Chemotherapy

Chemotherapy drugs kill cells that divide quickly, such as cancer cells. Chemotherapy is considered a systemic treatment because the chemotherapy drugs travel throughout the body in the bloodstream. Chemotherapy is given in cycles, and treatment may involve the use of a single drug or multiple drugs in combination. This treatment may be used if surgery and radiation therapy are not successful.

### Immunotherapy

Immunotherapy uses the body's own immune system to slow and kill cancer cells. With this treatment approach, substances — made either by the body or in a laboratory — are used to identify cancer cells as a threat and target them for destruction. Immunotherapy may be used for advanced cancers that did not respond to standard treatment.

### Targeted therapy

Targeted therapy drugs work by targeting specific proteins and genes that help cancer cells grow. This type of treatment can be given as a pill to patients with medullary thyroid cancer. Other types of targeted therapy drugs may be given to people with papillary or follicular thyroid cancer for whom standard treatment (surgery or radioactive iodine therapy) was not effective.

Other types of immunotherapy and targeted therapy are being evaluated in clinical trials. Ask your doctor or other member of your health care team if a clinical trial is an option for you. ■

## THYROID CANCER RESOURCES

▶ **American Thyroid Association:**  
[www.thyroid.org](http://www.thyroid.org)

*Thyroid Cancer (Papillary and Follicular)*

▶ **Light of Life Foundation:**  
[www.lightoflifefoundation.org](http://www.lightoflifefoundation.org)

▶ **ThyCa: Thyroid Cancer Survivors' Association:**  
[www.thyca.org](http://www.thyca.org)

## CLASSIFYING THYROID CANCER

Classification	Definition
<b>TUMOR (T)</b>	
<b>TX</b>	Primary tumor cannot be assessed.
<b>T0</b>	No evidence of primary tumor.
<b>Anaplastic &amp; Differentiated</b>	
<b>T1</b>	Tumor ≤ (not more than) 2 cm in greatest dimension limited to the thyroid.
<b>T1a</b>	Tumor ≤ (not more than) 1 cm in greatest dimension limited to the thyroid.
<b>T1b</b>	Tumor > (more than) 1 cm but ≤ (not more than) 2 cm in greatest dimension limited to the thyroid.
<b>T2</b>	Tumor > (more than) 2 cm but ≤ (not more than) 4 cm in greatest dimension limited to the thyroid.
<b>T3</b>	Tumor > (more than) 4 cm limited to the thyroid, or gross extrathyroidal extension (extended beyond the thyroid) invading only strap muscles.
<b>T3a</b>	Tumor > (more than) 4 cm limited to the thyroid.
<b>T3b</b>	Gross extrathyroidal extension (extended beyond the thyroid) invading only strap muscles (sternohyoid, sternothyroid, thyrohyoid or omohyoid muscles) from a tumor of any size.
<b>T4</b>	Includes gross extrathyroidal extension (extended beyond the thyroid) beyond the strap muscles.
<b>T4a</b>	Gross extrathyroidal extension (extended beyond the thyroid) invading subcutaneous soft tissues, larynx, trachea, esophagus, or recurrent laryngeal nerve from a tumor of any size.
<b>T4b</b>	Gross extrathyroidal extension (extended beyond the thyroid) invading prevertebral fascia or encasing the carotid artery or mediastinal vessels from a tumor of any size.
<b>Medullary</b>	
<b>T1</b>	Tumor is ≤ (not more than) 2 cm in greatest dimension limited to the thyroid.
<b>T1a</b>	Tumor is ≤ (not more than) 1 cm in greatest dimension limited to the thyroid.
<b>T1b</b>	Tumor is > (more than) 1 cm but ≤ (not more than) 2 cm in greatest dimension limited to the thyroid.
<b>T2</b>	Tumor is > (more than) 2 cm but ≤ (not more than) 4 cm in greatest dimension limited to the thyroid.
<b>T3</b>	Tumor is > (more than) 4 cm or with extrathyroidal extension (extended beyond the thyroid).
<b>T3a</b>	Tumor is > (more than) 4 cm in greatest dimension limited to the thyroid.
<b>T3b</b>	Tumor of any size with gross extrathyroidal extension (extended beyond the thyroid) invading only strap muscles (sternohyoid, sternothyroid, thyrohyoid or omohyoid muscles).
<b>T4</b>	Advanced disease.
<b>T4a</b>	Moderately advanced disease; tumor of any size with gross extrathyroidal extension (extended beyond the thyroid) into the nearby tissues of the neck, including subcutaneous soft tissue, larynx, trachea, esophagus or recurrent laryngeal nerve.
<b>T4b</b>	Very advanced disease; tumor of any size with extension toward the spine or into nearby large blood vessels, gross extrathyroidal extension (extended beyond the thyroid) invading the prevertebral fascia, or encasing the carotid artery or mediastinal vessels.
<b>NODE (N)</b>	
<b>NX</b>	Regional lymph nodes cannot be assessed.
<b>N0</b>	No evidence of locoregional lymph node metastasis.
<b>N0a</b>	One or more cytologically (based on fine needle aspiration biopsy) or histologically (based on pathologic analysis of tissues after surgery) confirmed benign lymph nodes.
<b>N0b</b>	No radiologic or clinical evidence of locoregional lymph node metastasis.
<b>N1</b>	Metastasis to regional nodes.
<b>N1a</b>	Metastasis to level VI or VII (pretracheal, paratracheal, or prelaryngeal/Delphian, or upper mediastinal) lymph nodes. This can be unilateral (on one side) or bilateral (on both sides) disease.
<b>N1b</b>	Metastasis to unilateral (on one side), bilateral (on both sides), or contralateral (opposite side of thyroid tumor) lateral lymph nodes (levels I, II, III, IV or V) or retropharyngeal lymph nodes.
<b>METASTASIS (M)</b>	
<b>M0</b>	No distant metastasis.
<b>M1</b>	Distant metastasis.

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## STAGING ANAPLASTIC THYROID CANCER

Stage	T	N	M
<b>IVA</b>	T1 - T3a	N0/NX	M0
<b>IVB</b>	T1 - T3a T3b, T4	N1 Any N	M0 M0
<b>IVC</b>	Any T	Any N	M1

## STAGING DIFFERENTIATED THYROID CANCER\*

Stage	T	N	M
<b>Younger than 55 years</b>			
<b>I</b>	Any T	Any N	M0
<b>II</b>	Any T	Any N	M1
<b>55 years or older</b>			
<b>I</b>	T1, T2	N0/NX	M0
<b>II</b>	T1, T2 T3a, T3b	N1 Any N	M0 M0
<b>III</b>	T4a	Any N	M0
<b>IVA</b>	T4b	Any N	M0
<b>IVB</b>	Any T	Any N	M1

\*Includes papillary, follicular, poorly differentiated and Hurthle cell carcinoma

## STAGING MEDULLARY THYROID CANCER

Stage	T	N	M
<b>I</b>	T1	N0	M0
<b>II</b>	T2, T3	N0	M0
<b>III</b>	T1 - T3	N1a	M0
<b>IVA</b>	T4a T1 - T3	Any N N1b	M0 M0
<b>IVB</b>	T4b	Any N	M0
<b>IVC</b>	Any T	Any N	M1

## HEAD & NECK CANCER RESOURCES

### NUTRITION

#### American Cancer Society

[www.cancer.org](http://www.cancer.org)

#### CancerCare

[www.cancercare.org](http://www.cancercare.org)

#### LIVESTRONG Foundation

[www.livestrong.org](http://www.livestrong.org)

#### OncoLink

[www.oncolink.org](http://www.oncolink.org)

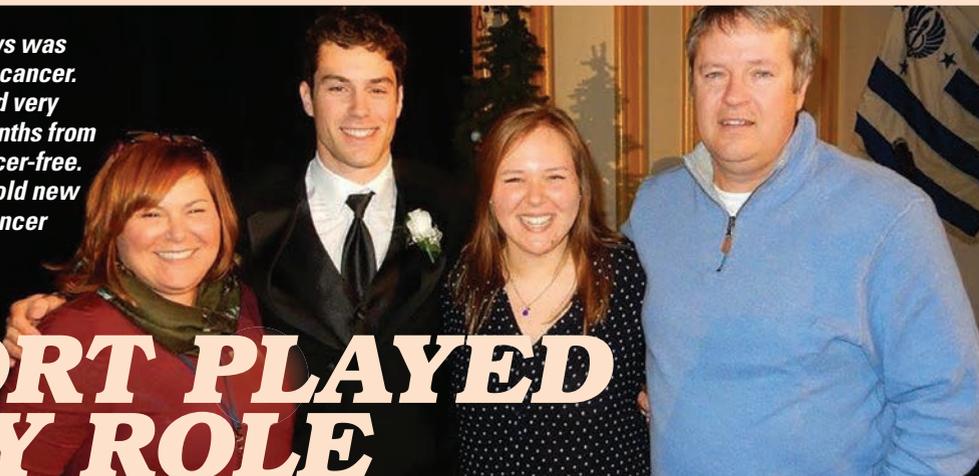
#### PearlPoint Cancer Support

[my.pearlpoint.org](http://my.pearlpoint.org)

#### Physicians Committee for Responsible Medicine

[www.pcrm.org/health/cancer-resources](http://www.pcrm.org/health/cancer-resources)

*Twenty years ago, Kris Matthews was diagnosed with Stage II thyroid cancer. The entire experience happened very quickly, taking around three months from diagnosis to being deemed cancer-free. But, at the time, for the 30-year-old new mom and her family, facing a cancer diagnosis was very frightening.*



# SUPPORT PLAYED KEY ROLE for this survivor



**A swollen node on the left side** of my neck prompted me to see an ENT. He immediately suggested taking out the lymph node to test it. He was concerned that because it was only appearing in a lymph node, it might be Hodgkin lymphoma. I had it removed right away, and it was sent off to pathology. We had a son and daughter under the age of two, I was teaching elementary school and my husband was a flight engineer on active military duty in Saudi Arabia. Even though my life was really busy, waiting for the results was scary. I couldn't stop thinking about what it might be. When several days passed and I still hadn't heard from the doctor, I called his office during a break at school.

"Oh, yes," he said, "you have cancer."

I got someone to cover my class and drove straight to his office. When he saw how scared I was, I think he realized that he could have told me in a more sensitive way. He explained that it wasn't Hodgkin lymphoma but was, instead, thyroid cancer. There weren't any tumors on my thyroid but because it was already in my lymph nodes, it was considered Stage II papillary thyroid cancer. I would need surgery to remove lymph nodes to see if they were affected.

I left his office and drove to the home of a close family friend who was a cancer survivor. We got online and did some research together. I definitely went down the rabbit hole looking for information. It was very scary, and the hardest part was trying to understand the different types of thyroid cancer.

One of my best friends came over that night, and we tried to reach my husband overseas. We called the military base and the Red Cross, who eventually patched a call through to him in the middle of the night. I was thankful they considered it a big enough deal to fly him home right away.

My mom and our family friend were a big part of my support system. We lived in a small town, so my mom insisted we see an oncologist and a surgeon in a nearby city. First, I had a radioactive iodine scan to see if I had any thyroid cells left. It just entailed me taking a pill, but it made me radioactive so I couldn't be at home around my kids. Instead I stayed with friends who didn't have kids and was just very careful about not sharing utensils.

After that, I had surgery to remove my thyroid. The surgeon removed 25 lymph nodes on the left side of my neck, which was more than even my doctor expected. The pathology came back while I was still in the hospital, and my surgeon felt pretty com-

fortable that it had only spread to one or two lymph nodes. The other lymph nodes had been killed by Hashimoto's thyroiditis, which I didn't know I had.

I went home from the hospital with staples that ran from my thyroid to behind my left ear. I was prescribed a daily pill that would do everything my thyroid was supposed to. I was lucky in that the dosage they gave me seemed to be the right level right from the start. However, the surgeon accidentally removed my parathyroid during surgery, so I wasn't able to process calcium anymore. As a result, I had to start taking a calcium supplement right away.

My first night home from the hospital, I was in the bathtub and I started having muscle spasms. My hands were clenching uncontrollably. We went straight to the emergency room, and they told me that I needed to take vitamin D to help absorb the calcium. It was frustrating at the time, but it turned out to be a blessing in disguise. Not only did that force me to be tenacious about getting good care, it required me to start taking good care of myself.

The last part of my treatment included radiation to kill any remaining thyroid cells. I went to the hospital and took another pill. I stayed there for about three days, basically locked in a room, drinking water to flush out the radioactive fluid. Nurses would bring me food and measure how radioactive I was, but I was basically alone the rest of the time. Honestly, it was kind of relaxing, like my own personal three-day radioactive spa treatment. When they decided it was safe for me to go home, I had to leave everything I'd brought with me, including my clothes and books.

Because I had just come back from maternity leave, I didn't have sick days to use at school. Fortunately, the other staff members pitched in and covered for me, but I had to go back to teaching pretty quickly. I had quite a few staples up my neck and I didn't want it to scare my sixth grade students, so I explained my situation to the parents, then the kids, and used it as a teaching moment.

After that, any time I got sick, my remaining lymph nodes got pretty big and I'd panic, but my doctor told me to expect it. It took about 10 years for the area under my incision to feel normal again. It was numb and sometimes felt a little prickly, but it wasn't anything that affected my life. My metabolism isn't as good as it was before, so that's an issue.

Our son, who was three months old when I was diagnosed, is about to turn 20, and I've been cancer-free the entire time. I get my TSH levels checked annually and, every day, along with my thyroid replacement pill, I take calcium, vitamin D and the other vitamins I need to be healthy. I never get lazy about it. ■

## ORAL CANCER

▲ **Oral cancer** can develop in any part of the mouth, including the lips, gums, roof and floor of the mouth, tongue, and the inside lining of the cheeks and lips (see Figure 1). Tumors that grow in the mouth can be benign (noncancerous) or malignant (cancerous), or they can start out benign and later develop into cancer. Most cancers that develop in the mouth form from squamous cells, the thin cells that line the mouth and throat.

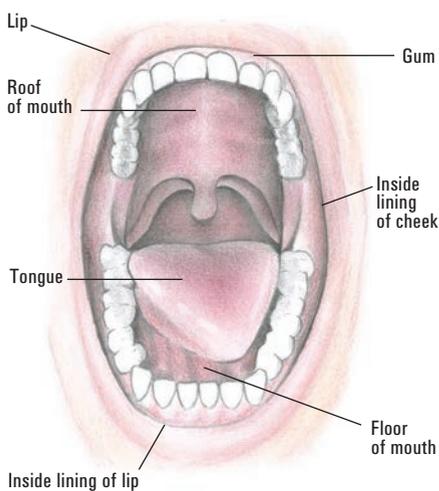
### DIAGNOSING ORAL CANCER

Symptoms that may point to oral cancer include a white or red patch on the gums, the tongue or the lining of the mouth; a swelling of the jaw that causes dentures to fit poorly or become uncomfortable; and unusual bleeding or pain in the mouth. However, these symptoms can sometimes go unnoticed, which may make it difficult to diagnose oral cancer at an early stage. When oral cancer is suspected, diagnostic tests will be done to determine whether cancer is actually present.

### STAGING

Once oral cancer is diagnosed, your doctor will use the TNM (tumor, node, metastasis) system to stage the disease and determine its extent, where it is located, and whether it has metastasized (spread) to nearby tissues or to other parts of your body. Your physical exam, diagnostic tests and a pathology report help your doctor decide the stage of your cancer and develop a treatment plan.

**FIGURE 1**  
▲ **MOUTH ANATOMY**



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### TREATMENT OPTIONS

Standard treatment options for oral cancer include surgery, radiation therapy and chemotherapy. Advances in cancer research have led to new options, such as immunotherapy. Your doctor will consider many factors when exploring treatment options, including the stage of disease, the location and size of the tumor, and your overall health status. Your doctor will also focus on preserving as much normal function as possible. Treatment options also depend on whether the oral cancer is primary or recurrent. You should talk to your health care team about the goal of treatment — whether the goal is to cure the cancer or to keep the cancer under control and relieve symptoms. Understanding the goal, as well as the benefits and risks of each option, will help you become better informed for making shared treatment decisions with your doctor.

#### Surgery

Surgery is done to remove early-stage tumors, such as small cancers of the lip and cancers of the floor of the mouth, front of the tongue, inside of the cheek, gums and hard palate. Larger tumors or tumors that have spread to nearby tissues, including lymph nodes in the neck, may also be treated with surgery. After surgery, reconstructive surgery may be recommended to repair damaged areas of the mouth and improve the ability to eat and speak (see *Reconstructive Surgery*, page 23).

#### Radiation therapy

Radiation therapy is usually recommended after surgery if the risk of cancer recurrence is high or if the cancer has spread to lymph nodes in the neck or other parts of the body. Known as external-beam radiation therapy (EBRT), this type of treatment is given from a machine that aims high-energy beams of radiation, usually X-rays or gamma rays, at specific points of the body. EBRT is usually given for about six weeks, once a day for 15 to 30 minutes, five days a week. Radiation therapy, with or without chemotherapy, may be used to treat oral cancers that are very large or in patients who have medical conditions that make surgery too dangerous.

#### Chemotherapy

Chemotherapy drugs kill cells that divide quickly, such as cancer cells. Given alone or as a combination of two or more drugs, chemotherapy is a systemic therapy which travels throughout the body through the blood-

stream, killing cancer cells or stopping them from growing and spreading. It is sometimes used to treat metastatic oral cancer and may be given after surgery to reduce the risk of cancer recurrence. Chemotherapy can be used with radiation therapy, a combination known as chemoradiation therapy. With this combination treatment, the chemotherapy drug used helps make the cancer cells more sensitive to the radiation, allowing the radiation to kill more of them.

#### Immunotherapy

Immunotherapy uses the body's own immune system to slow and kill cancer cells. With this treatment approach, substances — made either by the body or in a laboratory — are used to identify cancer cells as a threat and target them for destruction. Immunotherapy may be an option for oral cancers that have stopped responding to chemotherapy. Immunotherapy for head and neck cancers involves the use of drugs known as immune checkpoint inhibitors. These inhibitors may be given with or without chemotherapy. Immunotherapy may be an option for recurrent or metastatic oral cancer, but it is not typically used as a first-line treatment.

#### Targeted therapy

Targeted therapy drugs work by targeting specific proteins and genes that help cancer cells grow. Some of these drugs target the epidermal growth factor receptor (*EGFR*), a protein on the surface of cancer cells that helps them grow and divide. The drugs block *EGFR* and stop it from working, which can help slow or stop cancer growth. Targeted therapy may be given alone or in combination with chemotherapy for oral cancer that has spread to another part of the body.

Other types of immunotherapy and targeted therapy are being evaluated in clinical trials. Ask your doctor or another member of your health care team if participation in a clinical trial is an option for you. ■

### ORAL CANCER RESOURCES

- ▶ **Head and Neck Cancer Alliance:** [www.headandneck.org](http://www.headandneck.org)  
*Head and Neck Cancer*
- ▶ **National Cancer Institute:** [www.cancer.gov](http://www.cancer.gov)  
*Human Papillomavirus (HPV) Vaccines*  
*What You Need to Know about Oral Cancer*
- ▶ **The Oral Cancer Foundation:** [www.oralcancerfoundation.org](http://www.oralcancerfoundation.org)  
*Oral Cancer Facts*

## CLASSIFYING ORAL CANCER

Classification	Definition
<b>TUMOR (T)</b>	
<b>TX</b>	Primary tumor cannot be assessed.
<b>Tis</b>	Carcinoma in situ.
<b>T1</b>	Tumor ≤ (not more than) 2 cm, ≤ (not more than) 5 mm depth of invasion (DOI). DOI is depth of invasion and not tumor thickness.
<b>T2</b>	Tumor ≤ (not more than) 2 cm, DOI > (more than) 5 mm and ≤ (not more than) 10 mm; or tumor > (more than) 2 cm but ≤ (not more than) 4 cm, and ≤ (not more than) 10 mm DOI. DOI is depth of invasion and not tumor thickness.
<b>T3</b>	Tumor > (more than) 4 cm; or any tumor > (more than) 10 mm DOI. DOI is depth of invasion and not tumor thickness.
<b>T4</b>	Moderately advanced or very advanced local disease.
<b>T4a</b>	Moderately advanced local disease. (lip) Tumor invades through cortical bone or involves the inferior alveolar nerve, floor of mouth, or skin of face (i.e., chin or nose). (oral cavity) Tumor invades adjacent structures only (e.g. through cortical bone of the mandible [lower jawbone] or maxilla [upper jawbone], or involves the maxillary sinus or skin of the face).
<b>T4b</b>	Very advanced local disease. Tumor invades masticator space (located on either side of the face around the jawbones), pterygoid plates, or skull base and/or encases the internal carotid artery.
<b>NODE (N)</b>	
<b>NX</b>	Regional lymph nodes cannot be assessed.
<b>N0</b>	No regional lymph node metastasis.
<b>N1</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(-).
<b>N2</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(+); or larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension, ENE(-).
<b>N2a</b>	Metastasis in single ipsilateral (on the same side) node 3 cm or smaller in greatest dimension and ENE*(+); or a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-).
<b>N2b</b>	Metastasis in multiple ipsilateral (on the same side) nodes, none larger than 6 cm in greatest dimension and ENE*(-).
<b>N2c</b>	Metastasis in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension and ENE*(-).
<b>N3</b>	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-); or metastasis in a single ipsilateral (on the same side) node larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral (on the opposite side) or bilateral (on both sides) nodes, any with ENE(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>N3a</b>	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-).
<b>N3b</b>	Metastasis in a single ipsilateral (on the same side) node larger than 3 cm in greatest dimension and ENE*(+); or multiple ipsilateral, contralateral (on the opposite side) or bilateral (on both sides) nodes, any with ENE(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>METASTASIS (M)</b>	
<b>M0</b>	No distant metastasis.
<b>M1</b>	Distant metastasis.

\*Extranodal extension (ENE) refers to cancer cells that have spread beyond the lymph node into surrounding tissues.

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## STAGING ORAL CANCER

Stage	T	N	M
<b>0</b>	Tis	N0	M0
<b>I</b>	T1	N0	M0
<b>II</b>	T2	N0	M0
<b>III</b>	T3 T1, T2, T3	N0 N1	M0 M0
<b>IVA</b>	T4a T1, T2, T3, T4a	N0, N1 N2	M0 M0
<b>IVB</b>	Any T T4b	N3 Any N	M0 M0
<b>IVC</b>	Any T	Any N	M1

### HEAD & NECK CANCER RESOURCES

#### BASIC LIVING EXPENSES

- ▶ **Brenda Mehling Cancer Fund** (patients 18-40)  
www.bmcf.net, 661-310-7940
- ▶ **The CHAIN Fund Inc.**  
www.thechainfund.com, 203-691-5955
- ▶ **Family Reach Foundation**  
www.familyreach.org, 973-394-1411
- ▶ **Hugs and Kisses**  
www.hugsandkissesinc.org, 561-819-9471
- ▶ **Life Beyond Cancer Foundation**  
www.needhelpayingbills.com, 281-791-7549

### HEAD & NECK CANCER RESOURCES

#### PRESCRIPTION EXPENSES

- ▶ **CancerCare Co-Payment Assistance Foundation**  
www.cancercarescopay.org, 866-552-6729
- ▶ **Cancer Financial Assistance Coalition**  
www.cancerfac.org
- ▶ **The CHAIN Fund Inc.**  
www.thechainfund.com, 203-691-5955
- ▶ **Foundation for Health Coverage Education**  
www.coverageforall.org
- ▶ **GoodDays**  
www.mygooddays.org, 972-608-7141
- ▶ **HealthWell Foundation**  
www.healthwellfoundation.org, 800-675-8416
- ▶ **NeedyMeds**  
www.needyeds.org, 800-503-6897
- ▶ **Partnership for Prescription Assistance**  
www.pparx.org, 888-477-2669
- ▶ **Patient Access Network Foundation**  
www.panfoundation.org, 866-316-7263
- ▶ **Patient Advocate Foundation Co-Pay Relief**  
www.copays.org, 866-512-3861
- ▶ **Patient Services, Inc.**  
www.patientservicesinc.org, 800-366-7741
- ▶ **RxAssist**  
www.rxassist.org
- ▶ **RxHope**  
www.rxhope.com, 877-267-0517
- ▶ **RxOutreach**  
www.rxoutreach.com, 888-796-1234
- ▶ **Together Rx Access**  
www.togetherxaccess.com, 800-444-4106

# SALIVARY GLAND CANCER

▲ **Salivary glands** make saliva to coat the throat and help digest food. They are found inside and near the mouth. Many different types of cancerous (malignant) and noncancerous (benign) tumors can develop in the salivary glands.

Two main types of salivary glands are found in the mouth: major and minor. Three sets of major salivary glands are on each side of the face (see Figure 1):

- The parotid glands are the largest salivary glands and are located in front of the ears.
- The submandibular glands are smaller and located below the jaw.
- The sublingual glands are the smallest glands and are located under the floor of the mouth and below either side of the tongue.

Minor salivary glands are found in the lining of the lips and tongue, as well as on the roof of the mouth and inside the cheeks, nose, sinuses and larynx (voice box). These glands number in the hundreds and are too small to see without a microscope. Although tumors in these salivary glands are relatively rare, they are more often malignant than benign.

## DIAGNOSING SALIVARY GLAND CANCER

Salivary gland cancer is usually found during a routine dental visit or physical exam. Some symptoms of this cancer include a lump in the area of the ear, cheek, jaw, lip or inside the mouth; fluid draining from the ear; trouble swallowing or opening the mouth wide;

numbness or weakness in the face; or pain in the face that does not go away. If your doctor suspects you have salivary gland cancer, tests will be done to confirm the diagnosis.

## STAGING

After diagnosing your salivary gland cancer, your doctor will stage the disease using the TNM (tumor, node, metastasis) system to determine the extent of the cancer and its location. Your doctor may also order more tests to find out if cancer cells have spread from the salivary gland to other parts of the body.

Unlike other head and neck cancers, doctors often give salivary gland cancers a grade as well as a stage. The stage determines the extent of the cancer, where it is located and if it has spread. The grade indicates how abnormal the cells look under a microscope. Low grade cancers tend to grow slowly. Intermediate grade cancers behave somewhere between low and high grade cancers. High grade cancers look very different from normal cells and can spread quickly.

## TREATMENT OPTIONS

Standard treatment options for salivary gland cancer include surgery, radiation therapy, chemotherapy and immunotherapy. The treatment option used will be based on the type, grade and stage of your cancer as well as your overall health; the impact to your speech, chewing and swallowing; and your own preferences. Be sure to talk to your doctor and/or health care team about the benefits and risks of each type of treatment so that you are better informed for making shared treatment decisions.

### Surgery

Surgery is often the main treatment for salivary gland cancers. Your doctor will consider the location and stage of your cancer to choose the appropriate surgery for you.

Most cancers in the salivary glands occur in the parotid gland. If the cancer has formed in the outside part of the gland, also known as the superficial lobe, your doctor may remove the lobe. This procedure is called a superficial parotidectomy. If the cancer extends to deeper tissues, the operation to remove the entire gland is called a total parotidectomy, and it may require removal of the facial nerve, which may affect facial movement.

Other surgeries include removal of the submandibular or sublingual glands, and a lymph node dissection (lymphadenectomy) to remove nodes that may be involved by cancer.

### Radiation therapy

Radiation therapy involves the use of high-energy particles, such as X-rays, to kill cancer cells. It can be used to treat some salivary gland cancers that can't be removed by surgery or after surgery to kill any cancer cells that may have been left behind. Radiation therapy is sometimes used to help with symptoms of pain, bleeding or trouble swallowing in cases of advanced salivary gland cancer. Radiation therapy can be given externally or internally, but it is usually given externally for salivary gland cancers.

### Chemotherapy

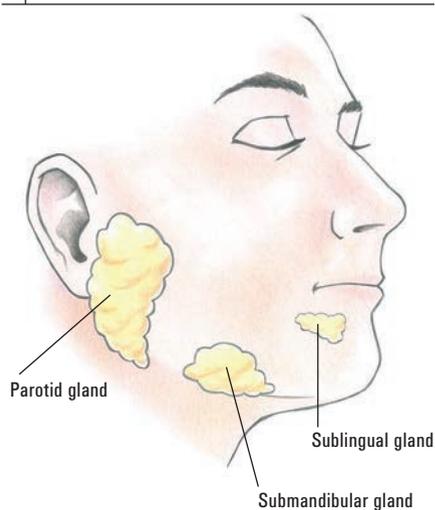
Chemotherapy drugs kill cells that divide quickly, such as cancer cells. Chemotherapy is considered a systemic treatment because the drugs travel throughout the body in the bloodstream. Treatment may involve the use of a single drug or multiple drugs in combination and is often given in cycles. Chemotherapy may be combined with radiation therapy; this treatment is known as chemoradiation therapy. In chemoradiation, the chemotherapy drug used helps the cancer cells become more sensitive to the radiation, allowing the radiation to kill more of them.

### Immunotherapy

Immunotherapy uses the body's own immune system to slow and kill cancer cells. This treatment approach involves the use of substances – made either by the body or in a laboratory – to identify cancer cells as a threat and target them for destruction. Immunotherapy for head and neck cancers involves the use of drugs known as immune checkpoint inhibitors. These inhibitors may be given with or without chemotherapy. Immunotherapy may be an option for salivary gland cancer that has stopped responding to chemotherapy.

Other treatments continue to be evaluated in clinical trials. Ask your doctor if a clinical trial is an option for you. ■

**FIGURE 1**  
▲ **SALIVARY GLANDS**



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## SALIVARY GLAND CANCER RESOURCES

- ▶ **American Cancer Society:** [www.cancer.org](http://www.cancer.org)  
*Salivary Gland Cancer*
- ▶ **American Society of Clinical Oncology:**  
[www.cancer.net](http://www.cancer.net)  
*Salivary Gland Cancer*
- ▶ **National Cancer Institute:**  
[www.cancer.gov](http://www.cancer.gov)  
*Salivary Gland Cancer Treatment*

## CLASSIFYING SALIVARY GLAND CANCER

Classification	Definition
<b>TUMOR (T)</b>	
<b>TX</b>	Primary tumor cannot be assessed.
<b>T0</b>	No evidence of primary tumor.
<b>Tis</b>	Carcinoma in situ.
<b>T1</b>	Tumor 2 cm or smaller in greatest dimension without extraparenchymal extension (spread to surrounding tissues).
<b>T2</b>	Tumor larger than 2 cm but not larger than 4 cm in greatest dimension without extraparenchymal extension (spread to surrounding tissues).
<b>T3</b>	Tumor larger than 4 cm and/or tumor having extraparenchymal extension (spread to surrounding tissues).
<b>T4</b>	Moderately advanced or very advanced disease.
<b>T4a</b>	Moderately advanced disease. Tumor invades skin, mandible (lower jaw), ear canal, and/or facial nerve.
<b>T4b</b>	Very advanced local disease. Tumor invades skull base and/or pterygoid plates and/or encases carotid artery.
<b>NODE (N)</b>	
<b>NX</b>	Regional lymph nodes cannot be assessed.
<b>N0</b>	No regional lymph node metastasis.
<b>N1</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(-).
<b>N2</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(+); or larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension, ENE(-).
<b>N2a</b>	Metastasis in single ipsilateral (on the same side) node 3 cm or smaller in greatest dimension and ENE*(+); or a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-).
<b>N2b</b>	Metastasis in multiple ipsilateral (on the same side) nodes, none larger than 6 cm in greatest dimension and ENE*(-).
<b>N2c</b>	Metastasis in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension and ENE*(-).
<b>N3</b>	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-); or metastasis in a single ipsilateral (on the same side) node larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral (on the opposite side) or bilateral (on both sides) nodes, any with ENE(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>N3a</b>	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-).
<b>N3b</b>	Metastasis in a single ipsilateral (on the same side) node larger than 3 cm in greatest dimension and ENE*(+); or multiple ipsilateral, contralateral (on the opposite side) or bilateral (on both sides) nodes, any with ENE(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>METASTASIS (M)</b>	
<b>M0</b>	No distant metastasis.
<b>M1</b>	Distant metastasis.

\*Extranodal extension (ENE) refers to cancer cells that have spread beyond the lymph node into surrounding tissues.

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## STAGING SALIVARY GLAND CANCER

Stage	T	N	M
<b>0</b>	Tis	N0	M0
<b>I</b>	T1	N0	M0
<b>II</b>	T2	N0	M0
<b>III</b>	T3 T0, T1, T2, T3	N0 N1	M0 M0
<b>IVA</b>	T4a T0, T1, T2, T3, T4a	N0, N1 N2	M0 M0
<b>IVB</b>	Any T T4b	N3 Any N	M0 M0
<b>IVC</b>	Any T	Any N	M1

### HEAD & NECK CANCER RESOURCES

## CANCER EDUCATION

- ▶ **Adenoid Cystic Carcinoma Organization International**  
[www.accoi.org](http://www.accoi.org)
- ▶ **American Cancer Society**  
[www.cancer.org](http://www.cancer.org)
- ▶ **American Society of Clinical Oncology**  
[www.cancer.net](http://www.cancer.net)
- ▶ **CANCER101**  
[www.cancer101.org](http://www.cancer101.org)
- ▶ **CancerCare**  
[www.cancercares.org](http://www.cancercares.org)
- ▶ **Head and Neck Cancer Alliance**  
[www.headandneck.org](http://www.headandneck.org)
- ▶ **HNC Living Foundation**  
[www.hncliving.org](http://www.hncliving.org)
- ▶ **International Association of Laryngectomees**  
[www.theial.org](http://www.theial.org)
- ▶ **LIVESTRONG Foundation**  
[www.livestrong.org](http://www.livestrong.org)
- ▶ **National Cancer Institute**  
[www.cancer.gov](http://www.cancer.gov)
- ▶ **National Comprehensive Cancer Network (NCCN)**  
[www.nccn.org](http://www.nccn.org)
- ▶ **NCI Contact Center (Cancer Information Service)**  
800-422-6237
- ▶ **Oncolink**  
[www.oncolink.org](http://www.oncolink.org)
- ▶ **Oral Cancer Awareness Foundation**  
[www.4orca.org](http://www.4orca.org)
- ▶ **The Oral Cancer Foundation**  
[www.oralcancerfoundation.org](http://www.oralcancerfoundation.org)
- ▶ **PearlPoint Cancer Support**  
[my.pearlpoint.org](http://my.pearlpoint.org)
- ▶ **Support for People with Oral and Head and Neck Cancer (SPOHNC)**  
[www.spo-hnc.org](http://www.spo-hnc.org)
- ▶ **Thyroid Head & Neck Cancer Foundation**  
[www.thancfoundation.org](http://www.thancfoundation.org)
- ▶ **Your Cancer Game Plan**  
[www.yourcancergameplan.com](http://www.yourcancergameplan.com)

# SINUS AND NASAL CANCER

▲ **Sinus and nasal cancers** form in the tissues within, around and behind the nose. The nose leads into the nasal cavity and is divided into two nasal passages. Paranasal sinuses are hollow spaces in the bones around the nose. Cells within the sinuses make mucus to prevent the inside of the nose from drying out during breathing. The sinuses and the nasal cavity work together to filter the air you breathe and warm and moisten it before it reaches your lungs.

The paranasal sinuses are named after the bones that surround them (see Figure 1).

- **Frontal sinuses:** lower forehead above the nose.
- **Maxillary sinuses:** cheekbones on either side of the nose.
- **Ethmoid sinuses:** beside the upper nose, between the eyes.
- **Sphenoid sinuses:** behind the nose, in the center of the skull.

Squamous cell carcinoma is the most common type of sinus and nasal cavity cancer, but many other types of cancers can occur as well. Cancer in any of the sinuses is rare, but among these cancers, the maxillary sinus is the most common site, followed by the ethmoid sinuses.

## DIAGNOSING SINUS AND NASAL CANCER

Cancer that is found in the sinuses and nasal cavity is often discovered because of symptoms such as blocked sinuses that do not clear, or sinus pressure; headaches or pain in the si-

nus areas; a runny nose; nosebleeds; a lump or sore inside the nose that does not heal; a lump on the face or roof of the mouth or neck; swelling or other trouble around the eyes; pain in the upper teeth; loose teeth or dentures that no longer fit well; vision changes or facial numbness. If your doctor suspects you have sinus or nasal cancer, tests to confirm the diagnosis will be done. If sinus or nasal cavity cancer is diagnosed, more tests will be done to find out whether cancer cells have spread within the sinuses and nasal cavity or to other parts of the body.

## STAGING

After diagnosing your sinus or nasal cavity cancer, your doctor will assign a stage to it according to its size, location and whether it has spread to other areas of the body. Knowing the stage of your cancer will help your health care team recommend the best treatment option for you.

Maxillary sinus cancer is staged differently than ethmoid sinus and nasal cavity cancers. The TNM (tumor, node, metastasis) staging for maxillary sinus cancer depends on where the cancer started, but the TNM staging of ethmoid sinus and nasal cavity cancer does not. Sinus and nasal cancers are staged from Stage 0, or carcinoma in situ (in which the cancer cells are growing only in the inner lining layer of the sinus, paranasinus or nasal cavity), to Stage IVC, in which the cancer has metastasized to distant organs.

## TREATMENT OPTIONS

Your doctor will consider many factors when exploring treatment options, including the stage of disease, the location and size of the

tumor, and your overall health status. Treatment options for sinus and nasal cancer include surgery, radiation therapy, chemotherapy and targeted therapy. Be sure to talk with your doctor and/or health care team about the goal of treatment and the benefits and risks of each option. Understanding these issues will help you become better informed for making shared treatment decisions with your doctor.

## Surgery

Surgery may be the only treatment needed for early-stage cancer. The surgeon will remove the cancer and some surrounding bone or other nearby tissues. Your doctor will consider the location and stage of your cancer to choose the appropriate surgery for you.

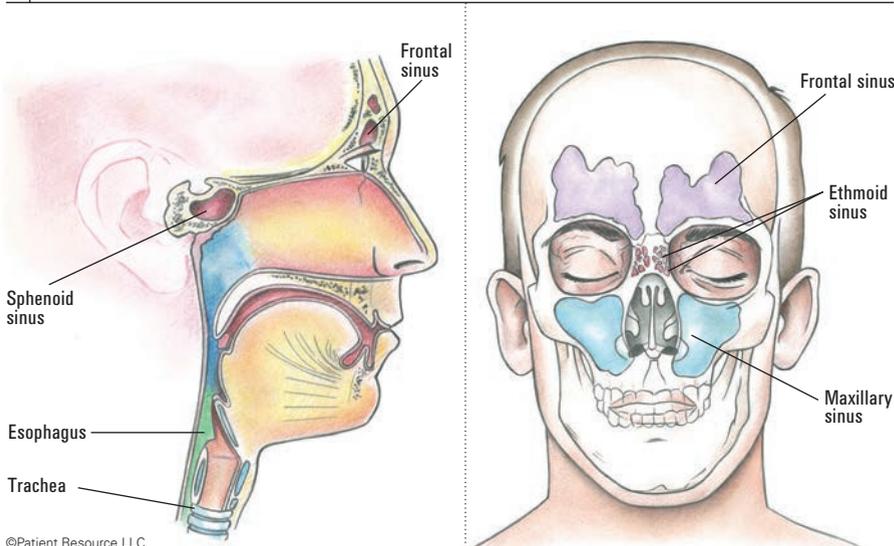
If the cancer is found in the nasal cavity, a wide local excision may be made. This procedure involves removal of the tumor and an area of normal tissue around it. If the tumor is found in the septum (dividing wall of the nose), sometimes the whole septum may be removed. If the tumor is in the side wall of the nasal cavity, the wall may need to be removed by a procedure called a medial maxillectomy.

Surgery for paranasal sinus tumors can vary. If the tumor is small and found only in the ethmoid sinuses, an endoscopic or external ethmoidectomy may be needed. An endoscopic ethmoidectomy involves the use of an endoscope, a thin, lighted tube, to reach the ethmoid sinuses through the nose. An external ethmoidectomy involves making an incision (cut) between the nasal bridge and the eye to reach the ethmoid sinuses. This procedure may also be done with an endoscope. If the tumor has grown into the maxillary sinus, a maxillectomy may be done. Maxillectomy may involve removal of bone from the roof of the mouth, upper teeth, part or all of the eye socket, part of the cheekbone, and/or the bony part of the upper nose.

A craniofacial resection may be done if the cancer is found in the ethmoid sinuses, frontal sinuses and/or the sphenoid sinuses. This surgery is more extensive than a maxillectomy because it can include removal of the upper parts of the eye socket and front of the skull base.

Surgery often involves removal of lymph nodes in the neck, regardless of whether the cancer is in the sinus or nasal cavity. A selective neck dissection involves removal of lymph nodes from a limited area of the neck. A modified radical neck dissection involves removal of most of the lymph nodes on one side of the neck between the jawbone

**FIGURE 1**  
▲ **SINUS AND NASAL ANATOMY**



## CLASSIFYING SINUS AND NASAL CANCER

Classification	Definition
<b>TUMOR (T)</b>	
<b>TX</b>	Primary tumor cannot be assessed.
<b>Tis</b>	Carcinoma in situ.
<b>Maxillary Sinus</b>	
<b>T1</b>	Tumor limited to maxillary sinus mucosa with no erosion or destruction of bone.
<b>T2</b>	Tumor causing bone erosion or destruction including extension into the hard palate and/or middle nasal meatus, except extension to posterior wall of maxillary sinus and pterygoid plates.
<b>T3</b>	Tumor invades any of the following: bone of the posterior wall of maxillary sinus, subcutaneous tissues, floor or medial wall of orbit (eye socket), pterygoid fossa, ethmoid sinuses.
<b>T4</b>	Moderately advanced or very advanced local disease.
<b>T4a</b>	Moderately advanced local disease. Tumor invades anterior orbital contents (eye socket), skin of cheek, pterygoid plates, infratemporal fossa, cribriform plate, sphenoid or frontal sinuses.
<b>T4b</b>	Very advanced local disease. Tumor invades any of the following: orbital apex (eye socket), dura (membrane surrounding the brain and spinal cord), brain, middle cranial fossa, cranial nerves other than maxillary division of trigeminal nerve (V2), nasopharynx (upper part of throat) or clivus (bony base of skull).
<b>Nasal Cavity and Ethmoid Sinus</b>	
<b>T1</b>	Tumor restricted to any one subsite, with or without bony invasion.
<b>T2</b>	Tumor invading two subsites in a single region or extending to involve an adjacent region within the nasoethmoidal complex, with or without bony invasion.
<b>T3</b>	Tumor extends to invade the medial wall or floor of the orbit (eye socket), maxillary sinus, palate, or cribriform plate.
<b>T4</b>	Moderately advanced or very advanced local disease.
<b>T4a</b>	Moderately advanced local disease. Tumor invades any of the following: anterior orbital contents (eye socket), skin of nose or cheek, minimal extension to anterior cranial fossa, pterygoid plates, sphenoid or frontal sinuses.
<b>T4b</b>	Very advanced local disease. Tumor invades any of the following: orbital apex (eye socket), dura (membrane surrounding the brain and spinal cord), brain, middle cranial fossa, cranial nerves other than (V2), nasopharynx (upper part of throat) or clivus (bony base of skull).
<b>NODE (N)</b>	
<b>NX</b>	Regional lymph nodes cannot be assessed.
<b>N0</b>	No regional lymph node metastasis.
<b>N1</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(-).
<b>N2</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(+); or larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral (on both sides) or contralateral (on the opposite side) lymph nodes, none larger than 6 cm in greatest dimension and ENE(-).
<b>N2a</b>	Metastasis in single ipsilateral (on the same side) node 3 cm or smaller in greatest dimension and ENE*(+); or a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-).
<b>N2b</b>	Metastasis in multiple ipsilateral (on the same side) nodes, none larger than 6 cm in greatest dimension and ENE*(-).
<b>N2c</b>	Metastasis in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension and ENE*(-).
<b>N3</b>	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-); or metastasis in a single ipsilateral (on the same side) node larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral (on the opposite side) or bilateral (on both sides) nodes, any with ENE(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>N3a</b>	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-).
<b>N3b</b>	Metastasis in a single ipsilateral (on the same side) node larger than 3 cm in greatest dimension and ENE*(+); or multiple ipsilateral, contralateral (on the opposite side) or bilateral (on both sides) nodes, any with ENE(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>METASTASIS (M)</b>	
<b>M0</b>	No distant metastasis.
<b>M1</b>	Distant metastasis.

\*Extranodal extension (ENE) refers to cancer cells that have spread beyond the lymph node into surrounding tissues.

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## SINUS AND NASAL CANCER

and collarbone, in addition to some muscle and nerve tissue. A radical neck dissection involves removal of nearly all of the lymph nodes on one side of the neck and even more muscle, nerves and veins.

### Radiation therapy

Radiation therapy is the use of high-energy particles, such as X-rays, to kill cancer cells. Radiation therapy is given in two main ways: external and internal. External-beam radiation therapy (EBRT) is the most common type of radiation therapy for sinus and nasal cancer. With this therapy, radiation is delivered to specific parts of the body from a machine. Receiving radiation therapy is similar to getting an X-ray, but the radiation is much stronger.

Intensity-modulated radiation therapy (IMRT) is a type of EBRT in which radiation is delivered more precisely to an area. IMRT is typically used for paranasal sinus cancer because it helps to minimize the dose of radiation delivered to vital structures in the area, such as the eyes.

Internal radiation, also known as interstitial radiation or brachytherapy, is infrequently used if the cancer comes back after EBRT. Thin, metal rods containing radioactive materials are inserted in or near the cancer. The implants are removed before you leave the hospital.

Radiation therapy may be used as the main treatment instead of surgery if your general health is too poor for surgery. This treatment is generally used for cancers in the sphenoid sinuses because these sinuses are difficult to reach surgically. Radiation therapy can also be used after surgery to kill any remaining cancer cells. This is called adjuvant treatment. Radiation therapy is often given with chemotherapy in a combination called chemoradiation therapy. With this combination, the che-

motherapy drug makes the cancer cells more sensitive to radiation, allowing it to kill them more effectively.

### Chemotherapy

Chemotherapy drugs kill cells that divide quickly, such as cancer cells. It is considered a systemic treatment because the chemotherapy drugs travel throughout the body in the bloodstream. Treatment may involve the use of a single drug or multiple drugs in combination and is given in cycles. Chemotherapy may be combined with targeted therapy or radiation therapy. Chemotherapy for sinus and nasal cancers is usually given when the disease is advanced (later stage).

### Targeted therapy

Targeted therapy drugs work by targeting specific proteins and genes that help cancer cells grow. Some of these drugs target the epidermal growth factor receptor (*EGFR*), a protein on the surface of cancer cells that helps them grow and divide. The drugs block *EGFR* and stop it from working, which can help slow or stop cancer growth. Targeted therapy is usually used, with or without chemotherapy, after surgery for advanced-stage cancers.

### Immunotherapy

Immunotherapy uses the body's own immune system to slow and kill cancer cells. With this treatment approach, substances – made either by the body or in a laboratory – are used to identify cancer cells as a threat and target them for destruction. Immunotherapy for head and neck cancers involves the use of drugs known as immune checkpoint inhibitors. These inhibitors may be given with or without chemotherapy. Immunotherapy may be an option for recurrent or metastatic sinus and nasal cancers.

Other types of immunotherapy and targeted therapy are being evaluated in clinical trials. Ask your doctor or another member of your health care team if a clinical trial is an option for you. ■

## STAGING SINUS AND NASAL CANCER

Stage	T	N	M
0	Tis	N0	M0
I	T1	N0	M0
II	T2	N0	M0
III	T3 T1, T2, T3	N0 N1	M0 M0
IVA	T4a T1, T2, T3, T4a	N0, N1 N2	M0 M0
IVB	Any T T4b	N3 Any N	M0 M0
IVC	Any T	Any N	M1

### SINUS AND NASAL CANCER RESOURCES

- ▶ **American Cancer Society:** [www.cancer.org](http://www.cancer.org)  
*Nasal Cavity and Paranasal Sinuses*
- ▶ **American Society of Clinical Oncology:** [www.cancer.net](http://www.cancer.net)  
*Nasal Cavity and Paranasal Sinus Cancer*
- ▶ **National Cancer Institute:** [www.cancer.gov](http://www.cancer.gov)  
*Paranasal Sinus and Nasal Cavity Cancer Treatment*

### HEAD & NECK CANCER RESOURCES

## REIMBURSEMENT & PATIENT ASSISTANCE PROGRAMS

- ▶ **Bayer Healthcare Pharmaceuticals**  
866-575-5002
- ▶ **Bristol-Myers Squibb Access Support**  
[www.bmsaccesssupport.bmscustomerconnect.com/patient](http://www.bmsaccesssupport.bmscustomerconnect.com/patient)  
800-861-0048
- ▶ **Bristol-Myers Squibb Patient Assistance Foundation**  
[www.bmspaf.org](http://www.bmspaf.org)  
800-736-0003
- ▶ **Caprelsa Access Support**  
[www.caprelsa.com/pt\\_resources\\_and\\_support.asp](http://www.caprelsa.com/pt_resources_and_support.asp)  
800-367-4999
- ▶ **Cometriq Access Services**  
[www.cometriq.com/support](http://www.cometriq.com/support)  
855-253-3273
- ▶ **Eisai Reimbursement Resources**  
[www.eisaireimbursement.com](http://www.eisaireimbursement.com)
- ▶ **Erbix Support**  
[www.erbitux.com/find-support-resources.html](http://www.erbitux.com/find-support-resources.html)
- ▶ **Genzyme Patient Support Services**  
[www.genzyme.com/patients/patient-support-services](http://www.genzyme.com/patients/patient-support-services)  
800-745-4447
- ▶ **Keytruda KEY + YOU Program**  
[www.keytruda.com/head-and-neck-cancer/keytruda-support-program/](http://www.keytruda.com/head-and-neck-cancer/keytruda-support-program/)
- ▶ **Lenvima Assistance**  
[www.lenvima.com/rai-r-differentiated-thyroid-cancer](http://www.lenvima.com/rai-r-differentiated-thyroid-cancer)
- ▶ **Lilly PatientOne**  
[www.lillypatientone.com](http://www.lillypatientone.com)  
866-472-8663
- ▶ **Merck Access Program**  
[www.merckaccessprogram.com](http://www.merckaccessprogram.com)  
855-257-3932
- ▶ **Merck Helps**  
[www.merckhelps.com](http://www.merckhelps.com)  
800-727-5400
- ▶ **Nexavar Financial Support**  
[www.nexavar-us.com/reach-financial-support/](http://www.nexavar-us.com/reach-financial-support/)  
866-639-2827
- ▶ **Pfizer Oncology Together**  
[www.pfizeroncologytogether.com/patient](http://www.pfizeroncologytogether.com/patient)  
877-744-5675
- ▶ **Pfizer RxPathways**  
[www.pfizerRxPathways.com](http://www.pfizerRxPathways.com)  
844-989-7284
- ▶ **Sandoz One Source**  
[www.sandozonestone.com](http://www.sandozonestone.com)  
844-726-3691
- ▶ **Sanofi Patient Connection**  
[www.sanofipatientconnection.com](http://www.sanofipatientconnection.com)  
888-847-4877
- ▶ **Teva Cares Foundation Patient Assistance**  
[www.tevacares.org](http://www.tevacares.org)  
877-237-4881
- ▶ **Teva Oncology Core Reimbursement Assistance & Support**  
[www.tevacore.com](http://www.tevacore.com)  
888-587-3263

# LARYNGEAL CANCER

▲ **The larynx, or voice box,** is in the lower part of the throat, above the opening of the trachea (windpipe). It contains the vocal cords and helps keep food and fluids from entering the trachea when you eat. The top part of the larynx is known as the supraglottis, the middle part is the glottis, and the bottom part is the subglottis (see Figure 1). The vocal cords are in the glottis. Cancer that starts in the larynx is called laryngeal cancer and is treated differently depending on which of the three sections it starts in.

Most cancers of the larynx form in thin, flat cells called squamous cells, which line the inside of the larynx. These cancers are known as squamous cell carcinomas or squamous cell cancers.

## DIAGNOSING LARYNGEAL CANCER

Laryngeal cancer is often found because of symptoms such as hoarseness or other voice changes, a sore throat that lasts a long time, constant coughing or pain when swallowing, coughing up blood and/or trouble breathing. When laryngeal cancer is suspected, tests are done to confirm the diagnosis.

## STAGING

After diagnosing your laryngeal cancer, your doctor will stage it, or determine the extent of its spread. Knowing the stage of your cancer will help your health care team recommend the best treatment option for you.

Laryngeal cancer is staged differently according to whether it started in the supraglottis, glottis or subglottis. The TNM (tumor, node, metastasis) values vary depending on where the cancer started, but the stages of laryngeal cancer determined by the TNM values are the same. Laryngeal cancer is staged from Stage 0, carcinoma in situ (in which the cancer cells are growing only in the inner lining layer of the larynx), to Stage IVC, in which the cancer has metastasized to distant organs. Laryngeal cancer that spreads most often goes to the lungs, but it may also go to the bones, liver or other organs.

## TREATMENT OPTIONS

Your doctor will consider many factors when exploring treatment options, including the stage of disease, the location and size of the tumor and your overall health status. Your doctor will also focus on preserving (as

much as possible) the ability to talk, eat and breathe normally. Treatment options also depend on whether the laryngeal cancer is primary or recurrent. Standard treatment options for laryngeal cancer include surgery, radiation therapy and chemotherapy. Advances in cancer research have led to new options, such as immunotherapy and targeted therapy. You should talk to your health care team about the goal of treatment — whether the goal is to cure the cancer or to keep the cancer under control and relieve symptoms. Understanding the goal, as well as the benefits and risks of each option, will help you become better informed for making shared treatment decisions with your doctor.

### Surgery

Surgery is done to remove the cancerous tissue. As with overall treatment decisions, your doctor will consider the location and stage of your cancer in choosing the appropriate surgery for you.

Vocal cord stripping is the removal of the superficial layers of tissue on the vocal cords. This technique can be done to take a biopsy sample and to treat carcinoma in situ and early cancers of the vocal cords. Most people can speak normally after they recover from this operation.

If the laryngeal cancer is confined to the surface of the vocal cords, your doctor may perform the surgery through endoscopy. With this procedure, the surgeon passes special surgical instruments through an endoscope (a hollow tube) that is placed down your throat into your voice box.

Transoral Laser Microsurgery (TLM) is an option that avoids the need for incisions in

the neck. This approach is an option for laryngeal cancers that are superficial or limited in extent.

Corpectomy is the removal of all or part of a vocal cord. It can be used to treat small cancers in the glottis. Removing part of a vocal cord can cause hoarseness.

Laryngectomy is the removal of all or part of the larynx, as described here. Your ability to speak normally after the surgery depends on how much of the larynx is removed.

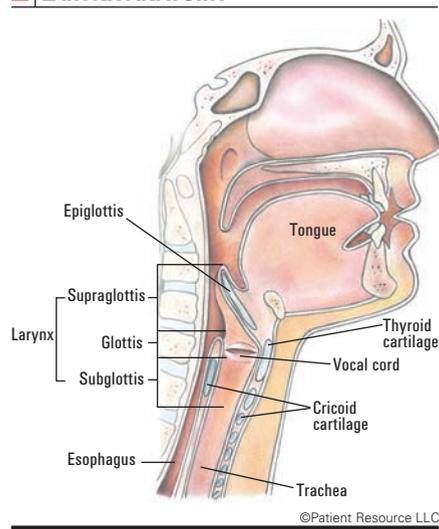
- **Supraglottic laryngectomy.** Only the part of your larynx above the vocal cords is removed. This procedure is done to remove some cancers that are confined to the supraglottis. Speech therapy is necessary after surgery to allow you to eat safely, and the effect on speech may vary.
- **Supracricoid laryngectomy.** With this procedure, a larger part of the larynx is removed, including both vocal cords. Your ability to speak is preserved, although it will change how you speak.
- **Vertical hemilaryngectomy.** With this procedure, only one vocal cord is removed, with the other is kept intact. This procedure can be used to treat some small cancers of the vocal cords. It will change how you speak but allows some ability for speech to remain.
- **Total laryngectomy.** With this procedure, the entire larynx is removed. The windpipe is brought up through the skin of the front of the neck, leaving a hole that you can breathe through. This is called a stoma. After a laryngectomy, you will not be able to speak normally, but people who have this procedure can learn new ways to speak. A total laryngectomy should not affect your ability to swallow. This treatment is an option for more advanced disease and is usually done with removal of lymph nodes in the neck, or lymph node dissection.

If your doctor performs a laryngectomy, you may also have reconstructive surgery. To learn more, see *Reconstructive Surgery*, page 23.

### Radiation therapy

Radiation therapy involves the use of high-energy particles, such as X-rays, to kill cancer cells. It can be used to treat some early laryngeal cancers. It is also used after surgery to try to kill any remaining cancer cells to lower the risk of recurrence. When it is used this way, it is called adjuvant therapy. Radiation therapy is often given with chemotherapy in a combination called chemoradiation therapy. Radia-

**FIGURE 1**  
**LARYNX ANATOMY**



# LARYNGEAL CANCER

## CLASSIFYING LARYNGEAL CANCER

Classification	Definition
<b>TUMOR (T)</b>	
<b>TX</b>	Primary tumor cannot be assessed.
<b>Tis</b>	Carcinoma in situ.
<b>Supraglottis</b>	
<b>T1</b>	Tumor limited to one subsite of supraglottis with normal vocal cord mobility.
<b>T2</b>	Tumor invades mucosa of more than one adjacent subsite of supraglottis or glottis or region outside the supraglottis (e.g., mucosa of base of tongue, vallecula, medial wall of pyriform sinus) without fixation of the larynx.
<b>T3</b>	Tumor limited to larynx with vocal cord fixation and/or invades any of the following: postcricoid area, preepiglottic space, paraglottic space, and/or inner cortex of thyroid cartilage.
<b>T4</b>	Moderately advanced or very advanced.
<b>T4a</b>	Moderately advanced local disease. Tumor invades through the outer cortex of the thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, soft tissues of neck including deep extrinsic muscle of the tongue, strap muscles, thyroid or esophagus).
<b>T4b</b>	Very advanced local disease. Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures.
<b>Glottis</b>	
<b>T1</b>	Tumor limited to the vocal cord(s) (may involve anterior or posterior commissure) with normal mobility.
<b>T1a</b>	Tumor limited to one vocal cord.
<b>T1b</b>	Tumor involves both vocal cords.
<b>T2</b>	Tumor extends to supraglottis and/or subglottis, and/or with impaired vocal cord mobility.
<b>T3</b>	Tumor limited to the larynx with vocal cord fixation and/or invasion of paraglottic space and/or inner cortex of the thyroid cartilage.
<b>T4</b>	Moderately advanced or very advanced.
<b>T4a</b>	Moderately advanced local disease. Tumor invades through the outer cortex of the thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, cricoid cartilage, soft tissues of neck including deep extrinsic muscle of the tongue, strap muscles, thyroid or esophagus).
<b>T4b</b>	Very advanced local disease. Tumor invades prevertebral space, encases carotid artery or invades mediastinal structures.
<b>Subglottis</b>	
<b>T1</b>	Tumor limited to the subglottis.
<b>T2</b>	Tumor extends to vocal cord(s) with normal or impaired mobility.
<b>T3</b>	Tumor limited to larynx with vocal cord fixation and/or invasion of paraglottic space and/or inner cortex of the thyroid cartilage.
<b>T4</b>	Moderately advanced or very advanced.
<b>T4a</b>	Moderately advanced local disease. Tumor invades cricoid or thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, soft tissues of neck including deep extrinsic muscles of the tongue, strap muscles, thyroid, or esophagus).
<b>T4b</b>	Very advanced local disease. Tumor invades prevertebral space, encases carotid artery or invades mediastinal structures.
<b>NODE (N)</b>	
<b>NX</b>	Regional lymph nodes cannot be assessed.
<b>N0</b>	No regional lymph node metastasis.
<b>N1</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(-).
<b>N2</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(+); or larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension and ENE(-).
<b>N2a</b>	Metastasis in single ipsilateral (on the same side) node, 3 cm or smaller in greatest dimension and ENE*(+); or a single ipsilateral node, larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-).
<b>N2b</b>	Metastasis in multiple ipsilateral (on the same side) nodes, none larger than 6 cm in greatest dimension and ENE*(-).
<b>N2c</b>	Metastasis in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension and ENE*(-).
<b>N3</b>	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-); or metastasis in a single ipsilateral (on the same side) node, larger than 3 cm in greatest dimension and ENE(+); or multiple ipsilateral, contralateral (on the opposite side), or bilateral (on both sides) lymph nodes, any with ENE*(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>N3a</b>	Metastasis in a lymph node, larger than 6 cm in greatest dimension and ENE*(-).
<b>N3b</b>	Metastasis in a single ipsilateral (on the same side) node, larger than 3 cm in greatest dimension and ENE*(+); or multiple ipsilateral, contralateral (on the opposite side), or bilateral (on both sides) nodes, any with ENE(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>METASTASIS (M)</b>	
<b>M0</b>	No distant metastasis.
<b>M1</b>	Distant metastasis.

\*Extranodal extension (ENE) refers to cancer cells that have spread beyond the lymph node into surrounding tissues.

## CAREGIVER & SUPPORT

▶ **4th Angel Patient & Caregiver Mentoring Program**

[www.4thangel.org](http://www.4thangel.org)

▶ **CanCare**

[www.cancare.org](http://www.cancare.org)

▶ **CancerCare**

[www.cancercares.org](http://www.cancercares.org)

▶ **Cancer Connection**

[www.cancer-connection.org](http://www.cancer-connection.org)

▶ **Cancer Hope Network**

[www.cancerhopenetwork.org](http://www.cancerhopenetwork.org)

▶ **Cancer Information and Counseling Line**

800-525-3777

▶ **Cancer Support Community**

[www.cancersupportcommunity.org](http://www.cancersupportcommunity.org)

▶ **Cancer Support Helpline**

888-793-9355

▶ **Cancer Survivors Network**

[csn.cancer.org](http://csn.cancer.org)

▶ **Cancer Wellness Center**

[www.cancerwellness.org](http://www.cancerwellness.org)

▶ **Caregiver Action Network**

[www.caregiveraction.org](http://www.caregiveraction.org)

▶ **CaringBridge**

[www.caringbridge.org](http://www.caringbridge.org)

▶ **Family Caregiver Alliance**

[www.caregiver.org](http://www.caregiver.org)

▶ **Friend for Life Cancer Support Network**

[www.friend4life.org](http://www.friend4life.org), 866-374-3634

▶ **The Hope Light Foundation**

[www.hopelightproject.com](http://www.hopelightproject.com)

▶ **Imerman Angels**

[www.imermanangels.org](http://www.imermanangels.org)

▶ **LIVESTRONG Foundation**

[www.livestrong.org](http://www.livestrong.org)

▶ **LivingWell Cancer Resource Center**

[www.livingwellcrc.org](http://www.livingwellcrc.org)

▶ **Patient Empowerment Network**

[www.powerfulpatients.org](http://www.powerfulpatients.org)

▶ **Patient Power**

[www.patientpower.info](http://www.patientpower.info)

▶ **PearlPoint Cancer Support**

[my.pearlpoint.org](http://my.pearlpoint.org)

▶ **SHARE Caregiver Circle**

[www.sharecancersupport.org/caregivers-support](http://www.sharecancersupport.org/caregivers-support)

▶ **Strike Out Cancer**

[www.strikeoutcancer.com](http://www.strikeoutcancer.com)

▶ **Stronghold Ministry**

[www.mystronghold.org](http://www.mystronghold.org)

▶ **Triage Cancer**

[www.triagecancer.org](http://www.triagecancer.org)

▶ **Turning Point**

[www.turningpointkc.org](http://www.turningpointkc.org)

▶ **Well Spouse Association**

[www.wellspouse.org](http://www.wellspouse.org)

▶ **weSPARK Cancer Support Center**

[www.wespark.org](http://www.wespark.org)

▶ **Wonders & Worries**

[www.wondersandworries.org](http://www.wondersandworries.org)

tion therapy may also be used to manage pain caused by advanced laryngeal cancer.

Radiation therapy is delivered in two main ways: externally and internally. External-beam radiation therapy (EBRT) is the most common type of radiation therapy for laryngeal cancer. In this therapy, radiation is delivered to specific parts of the body from a machine. The therapy is similar to getting an X-ray, but the radiation is much stronger. Internal radiation therapy, which is rarely used for laryngeal cancer, involves the placement of radioactive material in or near the cancer. It may be used alone or in combination with EBRT.

Before you begin radiation therapy, your health care team will take precise measurements to determine the best position for you to be in when radiation is given. The procedure itself is painless and does not last long, but getting you into place for treatment may take longer. Radiation therapy for laryngeal cancer is usually given once a day five days a week for about seven weeks. Smoking during radiation therapy is associated with worse outcomes. If you smoke, stop before radiation therapy begins.

Three-dimensional conformal radiation therapy (3D-CRT) is a newer EBRT technique. It involves the use of the results of imaging tests and special computers to pinpoint the location of the tumor. Multiple radiation beams are shaped and aimed at the tumor from different directions. The single beams are somewhat weak, making them less likely to damage normal tissues, but all the beams come together at the tumor to deliver a higher dose of radiation to it. Intensity-modulated radiation therapy (IMRT) is a form of 3D-CRT in which the patient is moved as radiation is delivered. IMRT is a common way to deliver EBRT for laryngeal cancer.

### STAGING LARYNGEAL CANCER

Stage	T	N	M
0	Tis	N0	M0
I	T1	N0	M0
II	T2	N0	M0
III	T3 T1, T2, T3	N0 N1	M0 M0
IVA	T4a T1, T2, T3, T4a	N0, N1 N2	M0 M0
IVB	Any T T4b	N3 Any N	M0 M0
IVC	Any T	Any N	M1

Used with permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original and primary source for this information is the AJCC Cancer Staging Manual, Eighth Edition (2017) published by Springer Science+Business Media.

### Chemotherapy

Chemotherapy drugs kill cells that divide quickly, such as cancer cells. Chemotherapy is considered a systemic treatment because the drugs travel throughout the body in the bloodstream. Chemotherapy is given in cycles, and treatment may involve the use of a single drug or multiple drugs in combination. When chemoradiation therapy is used, the chemotherapy drug helps make the cancer cells more sensitive to the radiation. Sometimes, chemoradiation is used as the primary treatment and, if the tumor goes away completely, surgery does not need to be done. It may also be given after surgery to decrease the likelihood that the cancer will recur (return).

### Immunotherapy

Immunotherapy uses the body's own immune system to slow and kill cancer cells. With this treatment approach, substances made either by the body or in a laboratory are used to identify cancer cells as a threat and target them for destruction. Immunotherapy for head and neck cancers involves the use of drugs known as immune checkpoint inhibitors. These inhibitors are usually given intravenously (through a vein) every two weeks and may be given with or without chemotherapy. Immunotherapy may be an option for recurrent or metastatic laryngeal cancer.

### Targeted therapy

Targeted therapy drugs work by targeting specific proteins and genes that help cancer cells grow. Some of these drugs target the epidermal growth factor receptor (EGFR), a protein on the surface of cancer cells that helps them grow and divide. The drugs block EGFR and stop it from working, which can help slow or stop cancer growth. Targeted therapy may be given alone or in combination with chemotherapy.

Other types of immunotherapy and targeted therapy are being evaluated in clinical trials. Ask your doctor or other member of your health care team if a clinical trial is an option for you. ■

### LARYNGEAL CANCER RESOURCES

- ▶ **American Cancer Society:** [www.cancer.org](http://www.cancer.org)  
*Laryngeal and Hypopharyngeal Cancer*
- ▶ **American Speech-Language-Hearing Association:** [www.asha.org](http://www.asha.org)  
*Laryngeal Cancer*
- ▶ **National Cancer Institute:** [www.cancer.gov](http://www.cancer.gov)  
*Laryngeal Cancer Treatment*

## THROAT CANCER

▲ **The pharynx, or throat,** is a short, hollow tube that starts behind the nose and leads to the esophagus. It has three parts. The upper part is the nasopharynx (behind the nose). The middle part is the oropharynx, which includes the soft palate (the back of the roof of the mouth), the base of the tongue, and the tonsils. The lower part is the hypopharynx. Cancers of these regions are referred to as pharyngeal, or throat, cancers or in more specific terms according to their region: nasopharyngeal cancer, oropharyngeal cancer or hypopharyngeal cancer (see Figure 1).

In all three regions of the throat, cancer often starts in the squamous cells that line the mucous membranes of the throat. Occasionally, more than one cancer can be found in the throat.

### DIAGNOSING THROAT CANCER

Cancer that is found in the throat is often discovered because of symptoms such as bleeding; a sore throat that doesn't go away; pain or difficulty with swallowing; difficulty moving the tongue or opening the mouth fully; trouble breathing or speaking; a lump in the back of the mouth, throat or neck; ear pain or decreased hearing; or a change in voice. If your doctor suspects throat cancer, diagnostic tests will be done.

### STAGING

After throat cancer is diagnosed, your doctor will use the TNM (tumor, node, metastasis) system to determine the extent of the cancer, assign it a stage and develop a personalized treatment plan.

Throat cancer is staged by the region of the throat in which the cancer is found. To stage oropharyngeal cancer, doctors also consider the presence of certain human papillomavirus (HPV) related biomarkers. When referring to the staging tables in this section, look carefully at the table headlines to ensure you view the information that applies to your diagnosis.

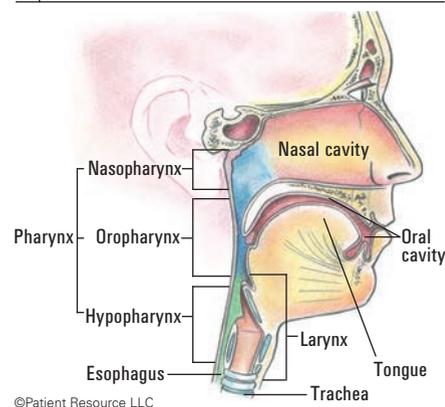
### TREATMENT OPTIONS

Your doctor will consider many factors when exploring treatment options, including the stage of disease, the location and size of the tumor, and your overall health status. Your doctor will also focus on preserving as much normal function as possible. Treatment options also depend on whether the throat cancer is primary or recurrent. Standard treatment options for throat cancer include surgery, radiation therapy and chemotherapy. Advances in cancer research have led to more recent options, such as immunotherapy and targeted therapy. You should talk to your health care team about the goal of treatment — whether the goal is to cure the cancer or to keep the cancer under control and relieve symptoms. Understanding the goal, as well as the benefits and risks of each option, will help you become better informed for making shared treatment decisions with your doctor.

#### Surgery

Surgery may be recommended for early to locally advanced stages of throat cancer. Surgical options include laser surgery (for early-stage tumors) or surgical removal of the tumor and some surrounding tissue. A new option is transoral robotic surgery (TORS), in which the surgeon uses robot-like instruments to remove a tumor from the throat. For tumors that may have spread to

**FIGURE 1**  
▲ **THROAT ANATOMY**



©Patient Resource LLC

the lymph nodes in the neck, surgery will include removal of the lymph nodes, also called lymph node dissection or neck dissection. After surgery, reconstructive surgery may be recommended for patients with large or recurrent tumors to replace missing tissue, skin or jawbone to restore a person's appearance and function (see *Reconstructive Surgery*, page 23).

#### Radiation therapy

Radiation therapy is the use of high-energy particles, such as X-rays, to kill cancer cells. It can be used after surgery to destroy any cancer cells that may remain (also called adjuvant radiation therapy). Radiation therapy may also be given alone or with chemotherapy as a first-line treatment for some throat cancers in which surgery would cause great difficulty swallowing. In these cases, surgery is reserved as a treatment option to be used if the cancer comes back.

#### Chemotherapy

Chemotherapy drugs kill cells that divide quickly, such as cancer cells. Chemotherapy is considered a systemic treatment because the drugs travel throughout the body in the bloodstream. Chemotherapy drugs are given in cycles and may involve the use of a single drug or multiple drugs in combination. Chemotherapy may be used with radiation therapy after surgery to remove larger throat cancers if the risk for recurrence is high. This is known as chemoradiation therapy. Chemoradiation may also be an option for first-line treatment. Chemotherapy given alone is not curative for throat cancers, but may be used in patients with recurrent cancer (cancer that has come back) or in patients where the goal of treatment is not cure but to prevent growth or spread of their cancer.

## ➔ HPV AND THROAT CANCER LINKED

**Human papillomavirus (HPV) is a virus** and is the most common sexually transmitted infection in the United States. HPV is easily spread through sexual contact from the skin and mucous membranes (lining of the mouth, throat or genital tract) of infected people to the skin and mucous membranes of their partners.

HPV is linked to up to 70 percent of oropharyngeal cancers, which affect the middle part of the throat, including the base of the tongue and tonsils. HPV-related throat cancers are on the rise among men in the United States.

HPV is categorized into two types of sexually transmitted viruses: low-risk and high-risk. Low-risk HPV types do not cause cancer, but they can cause skin warts on or near the genitals, anus, mouth or throat. High-risk HPV types cause cancer. Approximately a dozen of these types have been identified to date, but HPV types 16 and 18 are responsible for most HPV-related cancers.

Three vaccines are approved by the U.S. Food and Drug Administration (FDA) for both male and female children and young adults, 9 to 26 years old, to provide protection against new HPV infections. These vaccines are Gardasil (Human Papillomavirus Quadrivalent [Types 6, 11, 16, and 18] Vaccine, Recombinant), Gardasil 9 (Human Papillomavirus 9-valent Vaccine, Recombinant) and Cervarix (Human Papillomavirus Bivalent [Types 16 and 18] Vaccine, Recombinant). These vaccines do not treat people who already have HPV infections.



## CLASSIFYING OROPHARYNGEAL (HPV-) AND HYPOPHARYNGEAL CANCERS (HPV+ CLASSIFICATION ON PAGE 22)

Classification	Definition
<b>TUMOR (T)</b>	
<b>TX</b>	Primary tumor cannot be assessed.
<b>Tis</b>	Carcinoma in situ.
<b>Oropharyngeal (HPV-)</b>	
<b>T1</b>	Tumor 2 cm or smaller in greatest dimension.
<b>T2</b>	Tumor larger than 2 cm but not larger than 4 cm in greatest dimension.
<b>T3</b>	Tumor larger than 4 cm in greatest dimension or extension to lingual surface of epiglottis.
<b>T4</b>	Moderately advanced or very advanced local disease.
<b>T4a</b>	Moderately advanced local disease. Tumor invades the larynx, extrinsic muscle of tongue, medial pterygoid, hard palate or mandible (jawbone).
<b>T4b</b>	Very advanced local disease. Tumor invades lateral pterygoid muscle, pterygoid plates, lateral nasopharynx, or skull base or encases carotid artery.
<b>Hypopharyngeal</b>	
<b>T1</b>	Tumor limited to one subsite of hypopharynx and/or 2 cm or smaller in greatest dimension.
<b>T2</b>	Tumor invades more than one subsite of hypopharynx or an adjacent site, or measures larger than 2 cm but not larger than 4 cm in greatest dimension without fixation of hemilarynx.
<b>T3</b>	Tumor larger than 4 cm in greatest dimension or with fixation of hemilarynx or extension to esophagus.
<b>T4</b>	Moderately advanced and very advanced local disease.
<b>T4a</b>	Moderately advanced local disease. Tumor invades thyroid/cricoid cartilage, hyoid bone, thyroid gland or central compartment soft tissue.
<b>T4b</b>	Very advanced local disease. Tumor invades prevertebral fascia, encases carotid artery or involves mediastinal structures.
<b>NODE (N)</b>	
<b>NX</b>	Regional lymph nodes cannot be assessed.
<b>N0</b>	No regional lymph node metastasis.
<b>N1</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(-).
<b>N2</b>	Metastasis in a single ipsilateral (on the same side) lymph node, 3 cm or smaller in greatest dimension and ENE*(+); or larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension and ENE(-).
<b>N2a</b>	Metastasis in single ipsilateral (on the same side) node 3 cm or smaller in greatest dimension and ENE*(+); or a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-).
<b>N2b</b>	Metastasis in multiple ipsilateral (on the same side) nodes, none larger than 6 cm in greatest dimension and ENE*(-).
<b>N2c</b>	Metastasis in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension and ENE*(-).
<b>N3</b>	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-); or metastasis in a single ipsilateral (on the same side) node larger than 3 cm in greatest dimension and ENE*(+); or multiple ipsilateral, contralateral (on the opposite side) or bilateral (on both sides) nodes, any with ENE(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>N3a</b>	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-).
<b>N3b</b>	Metastasis in a single ipsilateral (on the same side) node larger than 3 cm in greatest dimension and ENE*(+); or multiple ipsilateral, contralateral (on the opposite side) or bilateral (on both sides) nodes, any with ENE(+); or a single contralateral node 3 cm or smaller and ENE(+).
<b>METASTASIS (M)</b>	
<b>M0</b>	No distant metastasis.
<b>M1</b>	Distant metastasis.

### STAGING OROPHARYNGEAL (HPV-) AND HYPOPHARYNGEAL CANCERS

Stage	T	N	M
<b>0</b>	Tis	N0	M0
<b>I</b>	T1	N0	M0
<b>II</b>	T2	N0	M0
<b>III</b>	T3 T1, T2, T3	N0 N1	M0 M0
<b>IVA</b>	T4a T1, T2, T3, T4a	N0, N1 N2	M0 M0
<b>IVB</b>	Any T T4b	N3 Any N	M0 M0
<b>IVC</b>	Any T	Any N	M1

\*Extranodal extension (ENE) refers to cancer cells that have spread beyond the lymph node into surrounding tissues.

Used with permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original and primary source for this information is the AJCC Cancer Staging Manual, Eighth Edition (2017) published by Springer Science+Business Media.

## THROAT CANCER

### Immunotherapy

Immunotherapy uses the body's own immune system to slow and kill cancer cells. With this treatment approach, substances made either by the body or in a laboratory are used to identify cancer cells as a threat

and target them for destruction. Immunotherapy for head and neck cancers involves the use of drugs known as immune checkpoint inhibitors. These inhibitors may be given with or without chemotherapy. Immunotherapy may be an option for recur-

rent or metastatic throat cancer and may be an option for throat cancer that has stopped responding to chemotherapy.

### Targeted therapy

Targeted therapy drugs work by targeting specific proteins and genes that help cancer cells grow. Some of these drugs target the epidermal growth factor receptor (*EGFR*), a protein on the surface of cancer cells that helps them grow and divide. The drugs block *EGFR* and stop it from working, which can help slow or stop cancer growth. Targeted therapy drugs are usually given in combination with chemotherapy and are used for throat cancer that has spread or has recurred (returned). ■

### CLASSIFYING OROPHARYNGEAL (HPV+) CANCER

Classification	Definition
<b>TUMOR (T)</b>	
<b>T0</b>	No primary identified.
<b>T1</b>	Tumor 2 cm or smaller in greatest dimension.
<b>T2</b>	Tumor larger than 2 cm but not larger than 4 cm in greatest dimension.
<b>T3</b>	Tumor larger than 4 cm in greatest dimension or extension to lingual surface of epiglottis.
<b>T4</b>	Moderately advanced local disease. Tumor invades the larynx, extrinsic muscle of tongue, medial pterygoid, hard palate or mandible (jawbone) or beyond.
<b>NODE (N)</b>	
<b>NX</b>	Regional lymph nodes cannot be assessed.
<b>N0</b>	No regional lymph node metastasis.
<b>N1</b>	Metastasis in four or fewer lymph nodes.
<b>N2</b>	Metastasis in more than four lymph nodes.
<b>METASTASIS (M)</b>	
<b>M0</b>	No distant metastasis.
<b>M1</b>	Distant metastasis.

### CLASSIFYING NASOPHARYNGEAL CANCER

Classification	Definition
<b>TUMOR (T)</b>	
<b>TX</b>	Primary tumor cannot be assessed.
<b>T0</b>	No tumor identified, but EBV-positive cervical node(s) involvement.
<b>Tis</b>	Carcinoma in situ.
<b>T1</b>	Tumor confined to nasopharynx (behind nasal cavity/upper part of throat), or extension to oropharynx and/or nasal cavity without parapharyngeal involvement.
<b>T2</b>	Tumor with extension to parapharyngeal space, and/or adjacent soft tissue involvement (medial pterygoid, lateral pterygoid, prevertebral muscles).
<b>T3</b>	Tumor with infiltration of bony structures at skull base, cervical vertebra, pterygoid structures, and/or paranasal sinuses.
<b>T4</b>	Tumor with intracranial extension, involvement of cranial nerves, hypopharynx, orbit, parotid gland, and/or extensive soft tissue infiltration beyond the lateral surface of the lateral pterygoid muscle.
<b>NODE (N)</b>	
<b>NX</b>	Regional lymph nodes cannot be assessed.
<b>N0</b>	No regional lymph node metastasis.
<b>N1</b>	Unilateral (on one side) metastasis in cervical lymph node(s) and/or unilateral or bilateral metastasis (on both sides) in retropharyngeal lymph node(s), 6 cm or smaller in greatest dimension, above the caudal border of cricoid cartilage.
<b>N2</b>	Bilateral metastasis in cervical lymph node(s), 6 cm or smaller in greatest dimension, above the caudal border of cricoid cartilage.
<b>N3</b>	Unilateral (on one side) or bilateral (on both sides) metastasis in cervical lymph node(s), larger than 6 cm in greatest dimension, and/or extension below the caudal border of cricoid cartilage.
<b>METASTASIS (M)</b>	
<b>M0</b>	No distant metastasis.
<b>M1</b>	Distant metastasis.

### THROAT CANCER RESOURCES

- ▶ **American Cancer Society:** [www.cancer.org](http://www.cancer.org)  
*Pharyngeal Cancer*
- ▶ **American Society of Clinical Oncology:** [www.cancer.net](http://www.cancer.net)  
*Head and Neck Cancer*
- ▶ **National Cancer Institute:** [www.cancer.gov](http://www.cancer.gov)  
*Human Papillomavirus (HPV) Vaccines*

### STAGING OROPHARYNGEAL (HPV+) CANCER

Stage	T	N	M
<b>I</b>	T0, T1, T2	N0, N1	M0
<b>II</b>	T0, T1, T2 T3, T4	N2 N0, N1	M0 M0
<b>III</b>	T3, T4	N2	M0
<b>IV</b>	Any T	Any N	M1

### STAGING NASOPHARYNGEAL CANCER

Stage	T	N	M
<b>0</b>	Tis	N0	M0
<b>I</b>	T1	N0	M0
<b>II</b>	T0, T1, T2 T2	N1 N0	M0 M0
<b>III</b>	T0, T1, T2, T3 T3	N2 N0 N1	M0 M0 M0
<b>IVA</b>	T4 T4 T4 Any T	N0 N1 N2 N3	M0 M0 M0 M0
<b>IVB</b>	Any T	Any N	M1

Used with permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original and primary source for this information is the *AJCC Cancer Staging Manual, Eighth Edition (2017)* published by Springer Science+Business Media.

## RECONSTRUCTIVE SURGERY

▲ **If large areas of cancer** and surrounding tissue will be removed to treat your head and neck cancer, you may need reconstructive surgery. For this surgery, you will work with a team of surgeons that includes both an ablative surgeon, who removes the cancer, and a reconstructive surgeon, who performs complex reconstruction of the defect that results from removal of your cancer. Before recommending the type of surgery that best meets your needs, your doctor will perform a preoperative assessment and consider the tumor stage and prognosis, as well as your age, sex, general health and functional status. Your surgical team will consider other areas of the body that will serve best as donor sites for tissue used for reconstruction.

In general, your reconstructive surgery team strives to accomplish three goals.

**1. Protect vital structures.** Covering important structures with healthy tissue protects

them from potential life-threatening damage.

**2. Restore function.** Sometimes removing tumors affects how your body works, including breathing, eating, chewing and swallowing. A reconstructive surgeon will try to restore function as much as possible. After surgery, you will work with a team of therapists to relearn these vital functions.

**3. Restore appearance.** Your quality of life, including your ability to work and enjoy family activities, may be affected if you are not comfortable with your appearance. Reconstruction can improve your self-image, making you more comfortable going out in public and resuming your daily activities.

Reconstructive techniques range from using small amounts of tissue from areas near the surgical site to using skin, tissue, bones and tendons from distant areas of the body to reconstruct the complex function and shape of the head and neck. Sometimes artificial dental or facial parts, called prosthetics, are used.

Head and neck surgery can affect you physically, nutritionally and emotionally. Talk with

your reconstruction team about what to expect before surgery so you can mentally prepare for the time it may take to regain important functions and feel comfortable with your appearance. Keep in mind the reconstructive process is complex and won't happen overnight, so it is important to be patient.

Different strategies involved with reconstruction include the following.

■ **Tracheostomy.** In this procedure (also called a tracheostoma), a surgeon makes a hole (stoma) in the skin at the front of your neck and connects it to your trachea (windpipe). A hollow plastic tube is inserted through this hole and helps you breathe by letting air in and out of the lungs. The procedure is often only temporary, but some head and neck cancer surgeries, such as laryngectomy, may leave you with a permanent stoma.

■ **Gastrostomy tube (G-tube).** Cancer of the throat can affect your ability to swallow. If difficulty swallowing prevents you from getting enough nutrition, you may need a gastrostomy tube, which is a feeding tube placed into your stomach through a small incision in your belly. One type of G-tube is the percutaneous endoscopic gastrostomy (PEG) tube, which is placed with a thin, flexible tube-like instrument called an esophagoscope. Special liquid food is given through the tube. It can often be removed after therapy once you are able to swallow better.

■ **Prosthetic rehabilitation.** A prosthesis is a synthetic replacement of part of your face or mouth that has been removed by surgery, such as the eye, ear, nose, hard palate (roof of mouth) or teeth. The prosthesis is made from a special material and is designed and created specifically for you by a specialist, called a maxillofacial prosthodontist. Special training is given on how to use the prosthetic.

■ **Dental rehabilitation.** When the upper jaw (maxilla) or lower jaw (mandible) is removed along with teeth, you might consider dental rehabilitation. This is the placement of prosthetic teeth to improve your appearance and quality of life, as well as help you eat normally. ■

## ➔ LIVING WITH A STOMA

**If you have a laryngectomy** (removal of the voicebox), you will need to adjust to life with a stoma, which is a hole made in your neck and trachea (windpipe).

A surgeon will permanently separate your windpipe from your esophagus and attach it to the stoma, which means you will breathe through it instead of through your nose or mouth. Your medical team will teach you about humidification (the process of adding moisture to the air) and a heat and moisture exchange system (HME) while you're still in the hospital. These recommendations will help you prepare for living with a stoma.

### BATHING/SHOWERING

It won't take long to become comfortable bathing and showering with your stoma. Severe coughing can result from even the smallest amount of water entering the stoma, so you may choose to wear a shower collar or shield to help protect it.

### CARE

Proper cleaning of the stoma is very important. Your breathing will be altered, and your body might compensate by producing more mucus, which could form a plug in the stoma. Your medical team will give you detailed instructions about how to clean your stoma daily.

### CLOTHING

As you grow more comfortable with your stoma, you will likely need to adjust your wardrobe, both to protect your stoma as well as to fashionably disguise it. Each person's style is differ-

ent, so find what works best for you. Mock turtlenecks tend to be comfortable with good stoma coverage, and many scarves can be worn by both men and women. Many jewelry options are available to help conceal your stoma. Talking to other people who have stomas may help you find a style that works best for you.

### COUGHING

Although coughing through your stoma instead of your mouth might seem strange at first, you will probably adjust fairly quickly. Use a tissue to cover your stoma instead of your mouth when you feel yourself about to cough. This will help you catch any mucus produced by your cough.

### DENTURES

Your surgeon will tell you when you can resume wearing your dentures after surgery. As you

learn new ways of speaking, it's important to keep wearing your dentures. Properly fitted dentures help the mouth compress air to produce speech that is more easily understood. Keep your dentures clean and in your mouth at all times, except for at bedtime. See your dentist before you begin voice lessons if your dentures need to be refitted.

### PROTECTION

Wearing a special protective cover over your stoma may help keep out substances in the air. Talk to your health care team about the best option for you.

### SLEEPING

Although you might be fearful of sheets or blankets covering your stoma as you sleep, you shouldn't worry about any danger. Any interference with your breathing will wake you immediately.

In addition, to help you manage the emotions you may be feeling, talk with your medical team, a therapist or other survivors. Their advice and support may help you adjust to your new normal.

### ADDITIONAL RESOURCES

- ▶ **American Society of Clinical Oncology:** [www.cancer.net/ReconstructiveSurgery](http://www.cancer.net/ReconstructiveSurgery)
- ▶ **National Cancer Institute:** [www.cancer.gov/HeadandNeckCancers](http://www.cancer.gov/HeadandNeckCancers)
- ▶ **The Oral Cancer Foundation:** [www.oralcancerfoundation.org/Restoration/Rehabilitation](http://www.oralcancerfoundation.org/Restoration/Rehabilitation)

## DENTAL AND ORAL SIDE EFFECTS

▲ **People with head and neck** cancer often have dental and oral side effects from the cancer and its treatment. You and your health care team can take steps to help prevent and manage these side effects. Your team may include various specialists to help with dental problems, including your usual dentist, other dental specialists, a dietitian and a speech therapist.

The risk of dental side effects is lower for people with good oral health before treatment. If possible, see a dentist before treatment begins to treat decayed or infected teeth or other mouth problems. This early step can help prevent side effects or make them less severe. Also, it is important to maintain good dental hygiene during treatment. General dental hygiene recommendations for people with head and neck cancer include the following:

- Brush your teeth and gums with a soft-bristled toothbrush two or three times each day.
- Use fluoride toothpaste with a mild taste. Flavored toothpaste can irritate your mouth.
- If you usually floss, keep flossing at least once a day. If flossing causes bleeding or other problems, tell your health care team. If you do not usually floss, ask your health care team if you should start.

After treatment begins, check your mouth every day because many of the dental and oral problems caused by treatment can be seen or felt. The following are common dental and oral side effects, along with strategies to manage them. If you have side effects, tell your health care team as soon as possible. The sooner your team members know, the sooner they can help control them.

### DRY MOUTH

Dry mouth occurs when the glands that make saliva are damaged, which often happens after radiation therapy. It can be uncomfortable and increases the risk of cavities and oral infections. Ask your doctor if any over-the-counter or prescription medications may help.

#### *What to try*

- Drink 8 to 10 cups of liquid a day. Keep a water bottle nearby at all times to help remind you to drink.

- Suck on ice chips.
- Chew sugarless gum or suck on sugarless hard candy to stimulate saliva.
- Drink smoothies and slushies.
- Avoid soda, fruit juice, caffeine, cigarettes, chewing tobacco and alcohol, which can dry out the mouth.
- Avoid foods that stick to the roof of the mouth, such as peanut butter.

### JAW STIFFNESS

Surgery, radiation therapy and stress can cause jaw stiffness, which, in turn, can cause problems swallowing. Jaw stiffness can result in malnutrition and slower healing time, and can be difficult to treat once it occurs. Preventing jaw stiffness is important and is more likely to be successful than treating it after it occurs.

#### *What to try*

- Ask your doctor if exercising your jaw muscles is appropriate for you. A common exercise is to open and close your mouth as far as you can without causing pain.
- Ask your doctor if a prescription medicine could help relax your muscles or relieve your pain.

### MOUTH PAIN AND SORENESS

Pain and soreness of the mouth are common in people with head and neck cancer and can affect quality of life. Good hygiene and changes in your diet may help.

#### *What to try*

- Try topical medications for pain. Rinse your mouth before applying the medication to the gums or lining of the mouth.
- When eating, take small bites and chew slowly. Sip liquids with your meals.
- Eat moist, soft foods, such as applesauce, cooked cereals and scrambled eggs.
- Avoid foods that are sharp, crunchy, hot, spicy or acidic.
- Do not eat or drink foods or beverages that are very hot or very cold.
- Avoid alcohol and all forms of tobacco.

### ORAL MUCOSITIS (MOUTH SORES)

Oral mucositis is an inflammation of mucous membranes in the mouth. It can appear as red, burn-like sores or as ulcer-like sores in the mouth. It is often caused by chemotherapy or radiation therapy.

#### *What to try*

- Ask your doctor about medications

that can help prevent or minimize oral mucositis.

- Swish ice chips in your mouth.
- Keep your teeth and mouth clean. Brush your teeth every four hours and also at bedtime.
- Use a soft-bristled toothbrush, and replace your toothbrush often.
- Keep your mouth moist by drinking water or using a water-soluble lubricating jelly.

### SWALLOWING PROBLEMS

If you have swallowing problems, you may be referred to a speech therapist. A speech therapist can teach you techniques to make swallowing easier. Call your health care team right away if you cough or choke while you are eating.

#### *What to try*

- Chop or puree your food in a blender or food processor.
- Try eating soft or liquid foods. Thick fluids may be easier to swallow than thin ones.
- Drink high-calorie and high-protein liquids, such as protein shakes, especially if you are unable to eat enough regular protein-rich food.

### TOOTH DECAY

Tooth decay is more likely to occur in people being treated for head and neck cancer. In addition to good dental hygiene, the following may help prevent tooth decay.

#### *What to try*

- Avoid sugary foods and drinks, which can cause cavities. If you use gum or hard candy to help control dry mouth, choose sugar-free options.
- Sip water to help with dry mouth, which contributes to tooth decay.
- Ask your dentist about fluoride gel to help prevent cavities. ■

### ADDITIONAL RESOURCES

- ▶ **American Society of Clinical Oncology:** [www.cancer.net](http://www.cancer.net)  
*Dental and Oral Health*
- ▶ **National Cancer Institute:** [www.cancer.gov](http://www.cancer.gov)  
*Oral Complications of Chemotherapy and Head/Neck Radiation*
- ▶ **National Institute of Dental and Craniofacial Research:** [www.nidcr.nih.gov](http://www.nidcr.nih.gov)  
*Head and Neck Radiation Treatment and Your Mouth*
- ▶ **Support for People with Oral and Head and Neck Cancer:** [www.spohnc.org](http://www.spohnc.org)  
*Supportive Care*

## SIDE EFFECTS

▲ **Almost every type of cancer** treatment has side effects. Knowing the side effects to watch for – and what to do if they happen – will help you improve your quality of life.

Not every person has the same response to treatment. Even if these side effects don't apply to you right now, it's a good idea for you and your caregiver to be aware of them.

Tell your health care team as soon as any side effects develop. You can also take some steps at home to control them.

If you are having trouble eating because of oral pain or discomfort, see the previous page for ways to manage dental and oral side effects.

### ALOPECIA (HAIR LOSS)

Hair loss is often caused by chemotherapy and radiation therapy. Hair loss associated with chemotherapy can occur all over the body, affecting not only the head but also the eyebrows, face, chest, pubic area, etc. Hair loss associated with radiation therapy occurs only in the area receiving radiation. If you decide you want to wear a wig, ask your doctor for a prescription for “cranial (or skull) prosthesis due to alopecia caused by cancer treatments.” Phrasing it this way may make the wig eligible for insurance coverage.

#### *What to try*

- Use a soft-bristled hairbrush or wide-toothed comb.
- Avoid using hair dye and heating devices (dryers, curling irons, etc.).
- Sleep on a satin or silk pillowcase.
- Do not use hair elastics.
- Use a gentle, pH-balanced shampoo.

### ANOREXIA (LOSS OF APPETITE)

Loss of appetite is common among people with head and neck cancer because treatment may make eating more difficult. In addition, chemotherapy and immunotherapy are associated with loss of appetite.

#### *What to try*

- Eat foods high in calories that are easy to eat, such as pudding, milkshakes or cream-based soups.
- Use butter, oils and milk in food to increase calories.
- Try liquid meals or protein shakes if you don't feel like eating solid foods.

### DIARRHEA

Diarrhea has been associated with some treatment options for head and neck cancer. If left untreated, diarrhea can become severe and may even be life-threatening.

#### *What to try*

- Drink plenty of fluids, including water and other clear liquids, such as broth.
- Eat several small meals throughout the day rather than three big meals.
- Eat bland, low-fiber foods, such as boiled white rice, boiled chicken or white bread.
- Eat foods that have potassium, such as boiled or mashed potatoes and bananas.
- Avoid alcohol, caffeine and fatty foods.
- Ask your doctor about using over-the-counter anti-diarrheal medications.

### FATIGUE

The fatigue related to cancer and its treatment is different from the fatigue that healthy people feel. It usually lasts longer, is more severe and is unrelieved by sleep. Fatigue may be caused by many types of cancer treatments.

#### *What to try*

- Take frequent rests or naps, but limit each nap to 45 minutes.
- Sleep eight hours each night.
- Participate in regular physical activity, such as walking, yoga or bike riding.
- Set a routine for sleeping and waking.

### NAIL AND SKIN CHANGES

Many cancer treatments can affect your nails and skin. Radiation therapy, chemotherapy and some targeted therapy drugs can cause brittle nails or nail blemishes and skin changes, such as redness, rash and dryness. Immunotherapy has also been associated with rash, itching and peeling or blistering skin.

#### *What to try*

- Avoid cutting your nails.
- Use mild, unscented soap.
- Wear gloves when you work with your hands.

### NAUSEA AND VOMITING

Nausea and vomiting can cause severe dehydration and interrupt your treatment. Talk to your health care team about adding anti-emetics (anti-nausea drugs) to help control your nausea or about lowering the dose of your medication, which may also help.

#### *What to try*

- Eat five or six small meals daily instead of three large meals, and eat a light meal a few hours before receiving certain treatments.
- Drink plenty of fluids throughout the day.
- Identify and avoid foods, drinks or smells that trigger nausea.
- Sip ginger ale or suck on peppermints.
- Avoid alcohol, spicy foods and caffeine.
- Wait to exercise until you've had time to digest your meal.

### NEUROPATHY

Neuropathy is pain or discomfort caused by damage to the peripheral nervous system, which includes the nerves that control movement and feeling in the arms and legs. Symptoms of neuropathy are numbness, pain, burning, tingling or loss of feeling in the hands or feet. If you have these symptoms, keep a journal of when they happen, how long they last and how intense they are. Share the information with your health care team.

#### *What to try*

- Wear comfortable shoes and loose clothes.
- Keep your hands and feet warm.
- Avoid standing or walking for long amounts of time.

### NEUTROPENIA (INCREASED RISK OF INFECTION)

Neutrophils are a type of white blood cell that helps prevent infections. When the number of neutrophils drops to an abnormally low level, the condition is known as neutropenia. Neutropenia increases your risk for infection and makes it more difficult for your body to fight infections.

#### *What to try*

- Wash your hands often.
- Avoid sick people and crowded places.
- Use gloves when doing dishes or working in the garden.
- Ask your doctor about drugs that may help you produce more white blood cells. ■

#### **ADDITIONAL RESOURCES**

- ▶ **American Cancer Society:** [www.cancer.org](http://www.cancer.org)  
*Managing Cancer-related Side Effects*  
*Side Effects from Radiation Therapy to the Head and Neck*
- ▶ **American Society of Clinical Oncology:** [www.cancer.net](http://www.cancer.net)  
*Side Effects*

## THE ROLE OF A CAREGIVER

▲ **You have a unique role** in caring for a loved one who has a head or neck cancer. Treatments to this area of the body often have an impact on a person's ability to eat, swallow, chew, breathe or speak. Some surgeries can leave emotional as well as physical scars, which can seriously affect your loved one's self-esteem and emotional well-being. You may help with some basic functions as well as emotional support. As you help, remember that your loved one may have undergone treatment that has scarred the face and will notice if you stop making eye contact. Try to keep eye contact to let your loved one know you still see him or her as the same person.

■ **Manage diet.** Treatments for cancer of the mouth, jawbone, gums or throat can make it difficult to eat. Puree or blend food, or serve soft foods, such as mashed potatoes, soups, cottage cheese, custards, macaroni and cheese, scrambled eggs, protein shakes and well-cooked vegetables. Avoid sharp, crunchy foods or foods that require a lot of chewing. Always have fresh drinking water around to make swallowing easier, especially when eating. Ask about nutritional supplements, and consult a dietitian.

■ **Plan ahead for eating out.** We commonly socialize and celebrate over a meal. It's important that this component of life continues. Before you go, have your loved one look online at the restaurant menu to select a meal that is appealing. Call the restaurant and ask to speak with the manager. Explain that your loved one needs half of the meal precut into very small pieces and the other half placed in a to-go container. (This is because it will take your loved one twice as long as others at the table to eat the meal). Request that the person filling up water glasses keep your loved one's glass full. Select a table in the back rather than in the middle or front where there is risk of people staring. Promote conversations with others that are non-cancer related. This is a social time to be enjoyed.

■ **Communicate.** Share patient updates by group text, e-mail or another social media tool to relieve you and your loved one of having to repeat the same story multiple times. Communicating in this way also ensures that everyone hears a consistent message.

■ **Manage information.** Bring a list of your loved one's medications and allergies to doctor's visits, along with questions that you or

your loved one have written down to ask the doctor. Take notes at these visits to help you both remember all of the details.

■ **Organize.** Set up a system to manage bills, research, insurance correspondence and medical forms. Use a paper or electronic calendar to keep track of appointments and medication schedules.

■ **Drive.** Take your loved one to doctor's visits or to run errands.

■ **Clean.** Coordinate housework to happen while you are at doctors' visits, or set aside a block of time to help do the house chores. The most important time for extra cleaning will be when your loved one is receiving chemotherapy, if that is part of the treatment plan.

■ **Create a meal calendar.** Others often ask to help, so let them by bringing meals. Be sure to let them know about your loved one's special diet needs.

■ **Shop.** Plan trips in advance to relieve the stress of shopping, or volunteer to shop for your loved one. Shopping online can also preserve valuable time and energy for both of you.

■ **Exercise.** Rehabilitation is important. Suggest a walk or going for a ride to get out of the house.

■ **Assist with legal issues.** Help your loved one set up or find resources for long-term medical directives, including Durable Power of Attorney for Healthcare, an Advance Medical Directive and a Living Will.

■ **Promote safety.** Reduce clutter at home. Use night lights, and put a sticker on the phone with an emergency number to call. Consider medical identification jewelry.

■ **Care for kids.** Help your loved one enjoy some downtime by taking the kids out. If your loved one prefers not to be left alone, offer to entertain the kids at home. Recognize that young children may feel worried or confused about why their parent is ill and needs help. Be prepared for such a discussion by

being honest while supportive and dispel any worries that children may have about causing their parent to become ill.

■ **Care for teens.** Commonly when a parent is ill, teenagers are forced to assume a lot of adult responsibilities — cooking, cleaning, babysitting and giving up time with their friends. Step in and make sure that teens still get to be teens, and that when they help out, they are recognized for pitching in. Give them an opportunity to communicate with you so they can tell you their concerns and feelings.

■ **Care for pets.** Take the dog for a walk or to the dog park. Pet treats and toys are always a nice surprise. Consider boarding pets if your loved one will be away from home for an extended time.

■ **Handle outdoor chores.** Mow the lawn, trim the hedges or shovel snow while your loved one is going through treatment, or find a service to do so.

■ **Support.** Help find a local or online support group for your loved one.

■ **Socialize.** Invite a friend over to talk about something with your loved one that is completely unrelated to cancer. You both will enjoy the break.

■ **Reduce risk of infection.** Your loved one will be more prone to getting sick if around others with colds or flu symptoms. Make sure visitors are aware of this in advance. If temperatures are chilly, have your loved one wear a loose scarf around the neck area. This will help reduce risk of coughing spells by getting too much wind blowing around the stoma or surgical area. ■



### CAREGIVING BEGINS WITH

## ➤ TAKING CARE OF YOURSELF

**Caregiving is a mentally and physically exhausting responsibility,** and you won't be any good to your loved one if you aren't good to yourself. Caregivers often feel that by focusing on themselves, they are being selfish. Actually, it has the opposite effect, allowing you to be more alert and focused on your caregiving responsibilities. Eat right, exercise and get enough sleep. Don't ignore your favorite hobby. Lose yourself in a good book or movie. And don't feel guilty when you enjoy yourself. Everyone deserves a diversion.

You play an essential role, but it is important to realize you cannot carry the weight of the world on your shoulders. When you ask for and accept help from friends and family members, you get relief and they feel as if they are making a valuable contribution.

Make time for your own cancer screenings. Commonly, caregivers delay their own health needs while caregiving. Don't. Keep your appointments for mammograms, colonoscopies, pap smears and skin checks, as appropriate. Factor into your daily routine time to do some power walking. Practice 10 minutes of meditation or mindfulness each day. Your body and mind will thank you for it later.

It may be helpful to talk with others who are facing the same challenges as you. Search for support groups for caregivers, either in your local area or online.

▲ **The areas affected** by head and neck cancer are responsible for some of the most vital everyday functions, such as breathing, eating, drinking, swallowing and communicating. The treatment also can alter your appearance which, in turn, affects feelings about self-image and confidence. Although the goal is to control the head and neck cancer, your health care team works hard to preserve as much function of these affected areas as possible so that you can return to normal activities after treatment.

## REHABILITATION

Rehabilitation is a key part of the treatment process. Depending on the location of the cancer and the type of treatment, rehabilitation may include physical therapy, dietary counseling, speech therapy, and/or learning how to care for a stoma. A stoma is an opening into the windpipe through which a patient breathes after a laryngectomy (surgical removal of the larynx [voice box]).

You may need reconstructive and plastic surgery to rebuild bones or tissues (see page 23). Reconstructive surgery may not always be possible because of damage to the remaining tissue from the original surgery or from radiation therapy. In that case, a prosthodontist may be able to make a prosthesis (an artificial dental and/or facial part) to restore satisfactory swallowing, speech and appearance. When a prosthesis is necessary, special training on how to use it is given.

If you have difficulty speaking after treat-

ment, you may need speech therapy. A speech-language pathologist will likely visit you in the hospital. Speech therapy usually continues after you leave the hospital.

To help you eat after treatment, you may receive nutrients directly into a vein after surgery or through a feeding tube until you can eat on your own. If you have difficulty swallowing after surgery, a nurse or speech-language pathologist can help you learn how to swallow again.

## FOLLOW-UP CARE

People who have been treated for head and neck cancers have an increased chance of a new cancer developing, usually in the head, neck, esophagus or lungs. Regular follow-up care is essential after treatment to make sure that the cancer has not returned or that a second primary (new) cancer has not developed. Excessive alcohol use and smoking are risk factors for head and neck cancers, so your doctor will likely encourage you to quit these habits to decrease the chance of a new cancer developing.

Depending on the type of cancer you have, medical checkups may include exams of the stoma (if you have one) and of the mouth, neck and throat. Regular dental exams may also be necessary. Your doctor may perform a complete physical exam, blood tests, X-rays, computed tomography (CT), positron emission tomography (PET) or magnetic resonance imaging (MRI). If you have a history of smoking, talk to your doctor about whether to have an annual lung cancer screening.

Your doctor may monitor thyroid and pituitary gland function, especially if you received radiation therapy.

## STEPS TO LEADING A HEALTHY LIFESTYLE

For many people, surviving cancer is an incentive to live a healthy lifestyle. People recovering from head and neck cancer are encouraged to follow established guidelines for good health, such as not smoking, limiting alcohol, eating well and managing stress. Regular physical activity can help rebuild your strength and energy level. Your health care team can help you create an appropriate exercise plan based on your needs, physical



abilities and fitness level. A healthy lifestyle after a head and neck cancer diagnosis can reduce symptoms and improve quality of life, and may help lower the risk of some cancers.

- Get to and stay at a healthy weight.
- If you have eating problems or face any other challenges to good nutrition, talk to your doctor or ask for a referral to a registered dietitian.
- Aim for at least 150 minutes of physical activity every week, with a doctor's approval.
- Avoid tobacco and smokeless tobacco products. Research has shown that continued smoking and use of smokeless tobacco by a person with head and neck cancer may reduce the effectiveness of treatment and may increase the chance of a second primary cancer.
- Tell your doctor if you have ongoing feelings of sadness or distress. Anxiety or depression is common in survivors of head and neck cancer.
- Avoid alcohol, including mouthwash containing alcohol.
- Maintain oral health by taking good care of teeth and dentures. ■

## ADDITIONAL RESOURCES

- ▶ **American Society of Clinical Oncology:** [www.cancer.net/Survivorship](http://www.cancer.net/Survivorship)
- ▶ **Head and Neck Cancer Alliance:** [www.headandneck.org/LifeAfterTreatment](http://www.headandneck.org/LifeAfterTreatment)
- ▶ **HNC Living Foundation:** [www.hncliving.org/Resources](http://www.hncliving.org/Resources)
- ▶ **Patient Resource:** [www.patientresource.com](http://www.patientresource.com)



## UNDERSTANDING SURVIVORSHIP

**“Survivorship” means different things** to different people. For some, survivorship begins with a cancer diagnosis and includes the entire process of living with, through and beyond

cancer. For others, they may not consider themselves a “survivor” until after they finish treatment and are declared cancer-free.

No matter how you define survivorship, it's important to realize it can be one of the most complex parts of the cancer experience. And, like many aspects of cancer, it is different for every person. Survivors may experience a mixture of strong feelings, including joy, concern, relief, guilt and fear.

Some people say they appreciate life more after a cancer diagnosis and have gained a greater acceptance of themselves. Others have become accustomed to their routine of health care visits and find it unsettling to cope with everyday life. Often, relationships built with the cancer care team provide a sense of security during treatment, and people miss this source of support. This may be especially true as new worries surface over time, such as late effects of treatment, emotional challenges including fear of recurrence, sexuality and fertility concerns, and financial and workplace issues.

*Every survivor has unique concerns and challenges, and it helps to prepare with a good coping strategy. Here are a few suggestions:*

- ▶ **Recognize your fears and talk about them with a member of your health care team or a support group.**
- ▶ **Understand the challenge you are facing.**
- ▶ **Think through solutions.**
- ▶ **Ask for and accept the support of others.**
- ▶ **Feel comfortable with the course of action you choose.**

## CLINICAL TRIALS

▲ **Clinical trials may present** many potential benefits, such as the opportunity for patients to access cutting-edge treatments that are not yet widely available. In fact, many of the advances in cancer treatment that are helping to save lives today grew out of research conducted through clinical trials. Depending on your diagnosis and other factors, a clinical trial may be an option, so it's important to understand what it is and what it may mean for you.

Clinical trials are research studies that do the following:

- Evaluate the safety and effectiveness of a medical strategy, treatment or device.
- Develop “standards of care” by helping identify which treatments work best for certain illnesses or groups of people.
- Offer opportunities for people with cancer to help others by being involved in clinical research.

### TYPES OF CLINICAL TRIALS

There are three types of clinical trials.

**1. Treatment Trials** evaluate whether a new type of treatment (drug, surgery, radiation therapy) or a combination of treatments is better than the treatment options that are currently available.

**2. Quality-of-Life Trials** study ways to improve the quality of life for people being treated for cancer and cancer survivors who experience cancer-related and treatment-related symptoms. This type of trial may evaluate the effects of such things as nutrition, group therapy or counseling.

**3. Prevention, Screening and Diagnostic Trials** assess ways to reduce the chance of getting cancer in general. In these trials, which may be treatment or nontreatment trials,

many participants do not have cancer, but some have had cancer and are at risk of the cancer recurring (returning) or a second cancer type developing. Sometimes these trials simply ask participants to complete questionnaires and provide medical information.

### WHAT TO EXPECT

When you volunteer to participate in a clinical trial, you will receive specific instructions and an Informed Consent form. You are encouraged to ask questions about anything you don't understand before signing and returning the form. This is the ideal time to talk with your medical team about the many falsehoods that persist about clinical trials. For example, one of the most common fears is that some participants will receive only a sugar pill (placebo) and will not be treated for their cancer. This is not true. Participants in a cancer clinical trial are guaranteed to receive treatment – either the experimental treatment or the current standard of care – during the trial.

Trials are carefully thought out, planned and performed in an extremely consistent manner so that all patients are treated exactly the same, from medication dosage and schedule to the frequency of follow-up appointments. Institutional review boards or ethics committees carefully set up safeguards to make sure that all participants in the clinical trial remain safe throughout the process. Whether you're at a small hospital or a large facility, your medical team is responsible for diligently following safety protocols and measures for your treatment. You will be carefully monitored throughout the clinical trial. Even after the treatment ends, you will continue to be in close contact with the medical team.

Clinical trials present some potential risks, such as side effects. Almost every type of cancer treatment has side effects, and the treat-

## RESOURCES

### CLINICAL TRIALS

Use these resources to learn more about clinical trials and find ones that may be available to you.

#### ACCESS

[cantria.com/access](http://cantria.com/access)

#### AccrualNet

[accrualnet.cancer.gov](http://accrualnet.cancer.gov)

#### ACT (About Clinical Trials)

[www.learnaboutclinicaltrials.org](http://www.learnaboutclinicaltrials.org)

#### Center for Information and Study on Clinical Research Participation

[www.searchclinicaltrials.org](http://www.searchclinicaltrials.org)

#### CenterWatch

[www.centerwatch.com](http://www.centerwatch.com)

#### ClinicalTrials.gov

[www.clinicaltrials.gov](http://www.clinicaltrials.gov)

#### Coalition of Cancer Cooperative Groups

[www.cancertrialshelp.org](http://www.cancertrialshelp.org)

#### Lazarex Cancer Foundation

[www.lazarex.org](http://www.lazarex.org)

#### My Clinical Trial Locator

[myclinicaltriallocator.com](http://myclinicaltriallocator.com)

#### National Cancer Institute

[www.cancer.gov/clinicaltrials](http://www.cancer.gov/clinicaltrials)

#### NCI Contact Center (cancer information service)

800-422-6237

#### Patient Resource

[www.patientresource.com](http://www.patientresource.com)

#### TrialCheck

[www.trialcheck.org](http://www.trialcheck.org)

ments used in clinical trials are no different. If you consider volunteering for a clinical trial, talk with your medical team about what you can expect so you are not surprised by any effects.

It is important to understand that participation is always voluntary, even after the study begins. Even though you sign an agreement saying that you understand the potential risks involved, you can decide to leave the trial at any time. If your expectations aren't met or if you experience too many side effects, you can withdraw and return to standard of care treatment.

Cost is a common consideration with clinical trials. Routine patient care costs typically include those related to doctor visits and hospital stays. Some testing procedures that are part of standard care may be covered by your insurance. Research costs, which are directly related to the clinical trial and include drugs and procedures, are typically covered by the trial sponsor. Before dismissing the idea of participating because of the cost, search for available resources and explore your insurance plan benefits. You may find that you can have access to an innovative treatment and be an integral part of cancer research without taking on a great deal of additional expense. ■

## UNDERSTANDING INFORMED CONSENT

→ **Before volunteering for a clinical trial**, you will receive detailed information about the trial in an Informed Consent form. This customized Informed Consent information should explain – in easy-to-understand language – the components of the study:

- *The trial and its goals.*
- *How the participant will be monitored.*
- *The side effects to expect.*
- *The best standard regimen of care for that stage of disease, regardless of the doctor or institution.*
- *The safeguards in place. All clinical trial participants are protected by rules that apply nationwide to all facilities.*
- *How to withdraw from the trial at any time.*

You should be given a reasonable amount of time to review this information. Write down questions to ask your doctor to ensure you understand everything before signing the form. You're also encouraged to use this time to check with your insurance providers to determine what procedures are covered and what you are expected or required to pay out of pocket. Although many trials cover the costs of certain treatments, other expenses may be the responsibility of the participants, which would best be discovered before starting a trial.



# HELPING HEAD AND NECK CANCER PATIENTS LIVE LIFE FULLY



Too many head and neck cancer patients face financial challenges that are just as overwhelming as the cancer itself.

*“When you lose your teeth, your whole life changes. I was in a hopeless situation; I had no dental insurance. There was no way I was going to get dentures.”*

HNC Living Foundation was organized to become the national resource for financial assistance for head and neck

cancer patients. Since 2015, we’ve helped more than 1,000 patients with the critical needs of nutrition, prescriptions, transportation and dental services.

*“We often take for granted how important everyday things are in our lives — chewing, eating, smiling. Thanks to this program, I can do all of those things again. I’m forever grateful.”* - Thomas, Kansas City



To learn more about how HNC Living Foundation can provide help, visit [hncliving.org](https://hncliving.org).

P A T I E N T  
R E S O U R C E

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*Where information equals hope*