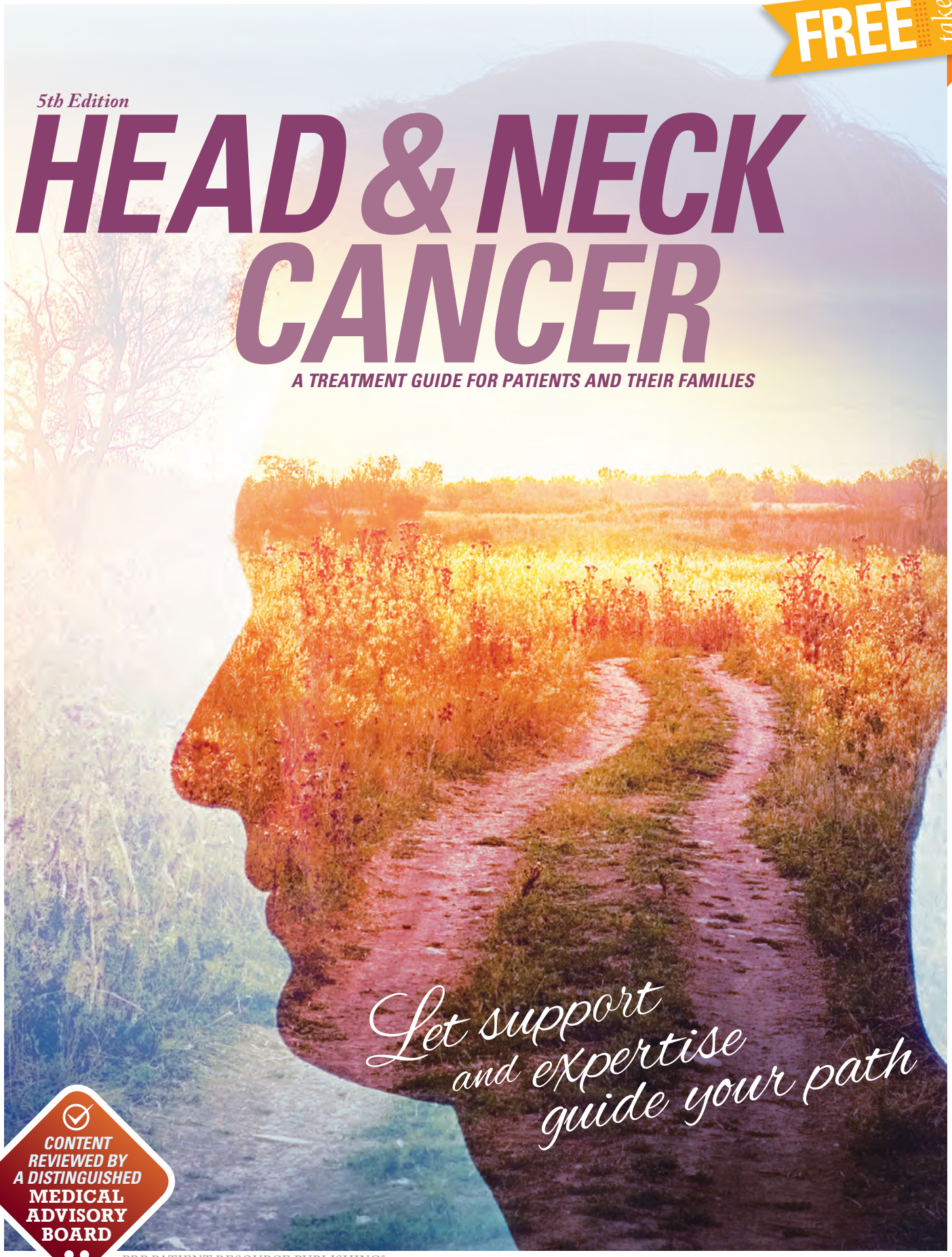
PATIENT RESOURCE

FREE take one

5th Edition

HEAD & NECK CANCER

A TREATMENT GUIDE FOR PATIENTS AND THEIR FAMILIES



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5th Edition

HEAD & NECK CANCER

IN THIS GUIDE

STAGING TABLES & HELPFUL RESOURCES

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Support is the foundation of your path forward

Facing a head and neck cancer diagnosis may feel overwhelming, but you are not alone. You will be surrounded by the support of a skilled health care team that is specially trained to help you with any physical and emotional challenges that may occur. Having a solid personal support system around you will also be healing and helpful.

Head and neck cancer describes a variety of malignant tumors that affect the mouth, pharynx (throat), larynx (voice box), sinuses, nose, thyroid and salivary glands (see *Cancer Types*, page 2). As a result, treating head and neck cancer is more than removing a tumor and killing cancer cells. It also includes repairing your body to enable vital functions, such as breathing, eating and speaking, to still occur. Reconstructive surgery may be necessary. If the tumor is small, a 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.

Many areas of your life may be affected by this diagnosis, including your mental and emotional health, your appearance, socializing, intimacy and returning to work. Knowing about some of the potential emotional and physical challenges you may face can help you prepare to address them. Your health care team and support groups can assist you through your healing journey.

MENTAL AND EMOTIONAL HEALTH

A cancer diagnosis also means taking care of your emotional health. Your feelings may range from being angry and anxious to fearful, guilty, isolated or depressed. These feelings are common, especially if you are not able to express yourself to someone who understands. Family and friends are wonderful, but they may not be able to relate. Ask your nurse navigator to recommend a support group for head and neck cancer survivors online or in your area. The people there will understand what you are going through because they have been through something similar.

Do not hesitate to ask for a referral to a patient counselor, therapist, mental health professional or other specialists who are experienced in working with people with head and neck cancer. Contact your doctor about continued feelings of hopelessness or despair. Get immediate medical attention for thoughts of suicide.

If you need speech therapy to help with your speech and swallowing and are not receiving it, contact your doctor or another health care team member.

APPEARANCE

You may feel self-conscious if your physical appearance changes because of treatment to your face, mouth or neck. These changes can affect how you feel about yourself. Some of the best advice about your appearance may come from other head and neck cancer survivors in an online or local support group.

Facial scarring can affect your self-esteem. Your external appearance, swelling and scarring will change as you heal and may be further altered by radiation treatment. Some scars will likely fade over time. In the meantime, once you have healed from treatment you can use makeup to help conceal them and even out your skin tone. Some makeup brands are designed specifically for this purpose and may require a prescription. Ask your doctor to recommend camouflage makeup that will work best for you.

Treatment may require that some or all your teeth are removed. Talk with a dentist with experience treating patients who have cancer about your options (see *Reconstruction & Rehabilitation*, page 17).

SOCIALIZING

People tend to socialize over a meal and often celebrate graduations, birthdays, etc., by eating at a restaurant. Although you may have challenges with how you eat, having a nice evening out with friends in a social setting is possible by doing things a little differently than before (see *Nutrition*, page 16).

INTIMACY

Dating and intimacy may be difficult. The physical changes in your body may make you feel less desirable or insecure about being intimate with a partner. You may be embarrassed to explain these feelings to a partner, but try to share as openly as possible about these concerns. He or she is probably as nervous and anxious as you are. Work through this together, small steps at a time. Talking with a therapist may help.

IN THE WORKPLACE

Your work relationships may be a valuable source of support. How you handle the news of your cancer diagnosis at work is very personal. You may feel it is a private matter and choose to keep it to yourself, or you may share it with your employer and coworkers. Appearance changes or physical limitations may require some explanation.

For more practical ways to adapt, keep in mind that some treatment side effects may require adjustments, such as a flexible schedule, reduced hours, a redesigned work station, the ability to work from home and/or altered responsibilities, so you may want to inform your manager and human resources department. Your employer is required under the Americans with Disabilities Act (ADA) to provide reasonable accommodations. Meet with your human resources representative for details about the ADA and how it applies in your workplace. ■

Finding the social support you need

Depending on your unique diagnosis, being treated for a head and neck cancer can affect many areas of your life. In addition to the physical challenges that may result from cancer and its treatment, you may encounter challenges with your relationships, career and confidence. Social support is available in many forms, and you are encouraged to explore it.

Many organizations offer support groups that are held in person, by telephone and online. Opening up to people who have had similar experiences can offer comfort and practical advice that are invaluable. A one-on-one buddy program, or peer-to-peer support, pairs you with another person who has the same type of cancer as you. You might also consider contacting a counselor or therapist who has expertise in working with people living with cancer.

In addition, advocacy groups, national organizations and wish-fulfillment organizations are available. Some of these organizations are specifically designed to help head and neck cancer survivors manage the unique financial challenges of treatment. Through donations, grants and volunteers, patients are able to move forward with treatment and recovery with much-needed help in a variety of areas, from access to liquid nutrition and transportation to medical appointments and dental prosthetics. Ask a member of your health care team for a referral.

Head and neck cancers:

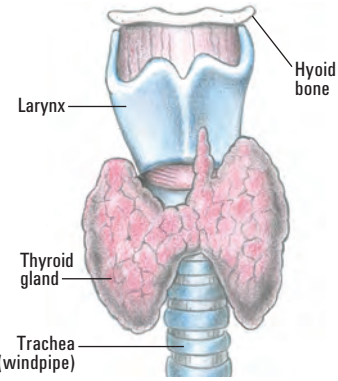
THYROID

The thyroid is a butterfly-shaped gland below the larynx (voice box) in the front of the neck. It produces hormones that help regulate heart rate, body temperature, growth and metabolism. Four parathyroid glands (not shown here) are pea-sized organs on the back of the thyroid. They produce hormones that control blood calcium levels.

Thyroid tissues contain two types of cells. Follicular cells produce the thyroid hormone, and parafollicular cells (commonly called C-cells) produce a hormone involved in processing calcium.

Papillary thyroid cancer is the most common of the four primary types of thyroid cancer. It begins in the follicular cells, as does follicular thyroid cancer. Both are called well-differentiated cancers because their cells look similar to healthy thyroid cells when viewed under a microscope. They tend to spread and grow slowly. Medullary thyroid cancer begins in the C-cells and is more aggressive than papillary and follicular thyroid cancer. Anaplastic thyroid cancer is called undifferentiated or poorly differentiated because its cells look very different from healthy thyroid cells. Anaplastic thyroid cancer tends to grow and spread very quickly. It is the most aggressive form of thyroid cancer.

Thyroid cancer is not often accompanied by many symptoms. It is sometimes discovered on imaging scans or other tests performed to diagnose another medical condition.



Symptoms may include:

- **A lump or swelling in the front of the neck**
- **Persistent hoarseness or voice changes**
- **Swollen neck glands**
- **Throat or neck pain**
- **Difficulty swallowing**
- **Trouble breathing**
- **Persistent cough without a cold**

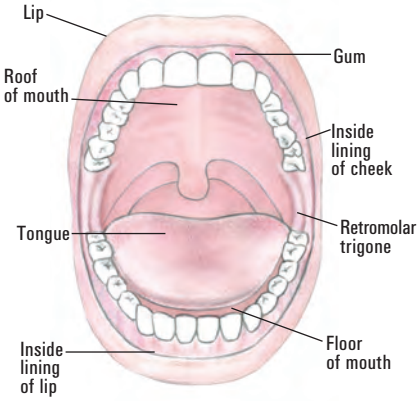
ORAL

The oral cavity area (also called the mouth) includes the lips, gums, lining inside the lips and cheeks, hard palate (front part of the roof of the mouth), the front two-thirds of your tongue, the floor of the mouth underneath it, and the retromolar trigone, which is the small space behind each wisdom tooth.

More than half of all head and neck cancers begin in the oral cavity. Oral cancers usually develop in the thin, flat squamous (SKWAY-mus) cells lining moist surfaces inside the mouth and are called squamous cell carcinoma. Cancers in the back of the mouth, including the base of the tongue, rear roof of the mouth (soft palate) and tonsils, are considered a type of throat cancer (oropharyngeal cancer).

Because the symptoms of oral cancer can also signal many other conditions, they are frequently diagnosed at a late stage. However, dentists typically screen for cancer at regular six month or annual appointments.

Some treatments for certain oral cancers may interfere with your ability to speak and/or eat normally and alter your appearance. It is very important for you and your doctor to have detailed discussions about the benefits, risks and potential side effects and late effects of every treatment, including quality-of-life issues.



Symptoms may include:

- **Pain**
- **Non-healing ulcer**
- **Bleeding**
- **Jaw swelling or neck mass**
- **A white or red patch on the gums, tongue or lining of the mouth**

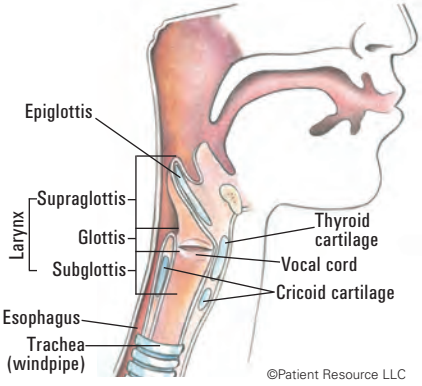
LARYNGEAL

The larynx (LAYR-inx) is often called the voice box because it holds the vocal cords. This short, hollow organ in the lower part of your throat is a passageway to the lungs. It is involved in functions that help you talk, breathe and swallow. It enables you to speak and protects your vocal cords with cartilage walls that form your Adam's apple. The larynx helps you breathe as part of the respiratory system. When you swallow, a tissue flap called the epiglottis (eh-pih-GLAH-tis) covers your trachea (windpipe) to keep food and liquid from entering your lungs.

Only two inches long, the larynx has three parts. The vocal cords are in the middle part called the glottis. Above is the supraglottis, and below is the subglottis, which ends at the top of your trachea.

Cancer of the larynx is also called laryngeal (layr-en-JEE-ul) cancer. It most often first develops in the organ's moist lining in thin, flat squamous (SKWAY-mus) cells and is called squamous cell carcinoma.

Your doctor will conduct a baseline assessment of voice, breathing and swallowing functions, as well as thoroughly discuss the benefits and risks of each treatment option and the impact potential side effects and late effects may have on your quality of life.



Symptoms may include:

- **Hoarseness or voice changes**
- **Persistent sore throat**
- **Constant cough**
- **Ear pain**
- **Neck mass**
- **Lump in the throat**
- **Painful or difficulty swallowing**
- **Trouble breathing**
- **Coughing up blood**

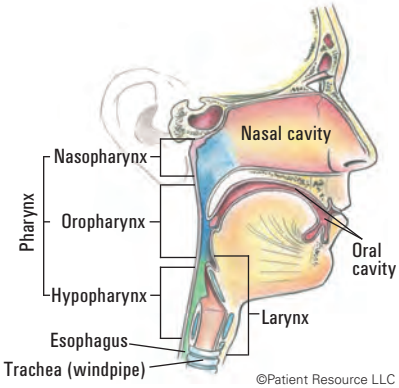
Understanding your diagnosis

THROAT

The throat is the more common name for the pharynx (FAYR-inx), a muscular, hollow tube about five inches long. As part of both the respiratory and the digestive systems, it functions as a passageway for air, food and liquid. It begins at the back of the nasal cavity and curves down to meet the esophagus and trachea (windpipe). It is divided into three parts: the nasopharynx, the oropharynx and the hypopharynx.

Throat cancer typically begins in the thin, flat squamous (SKWAY-mus) cells lining the mucous membranes. It may be more specifically referred to by the affected region: nasopharyngeal cancer, oropharyngeal cancer or hypopharyngeal cancer.

Although the oropharynx is at the back of the mouth, oropharyngeal cancer is diagnosed as a throat cancer because the oropharynx is part of the throat. Today, the human papillomavirus (HPV) is linked to most oropharyngeal cancers (see *HPV and cancer*, page 7). Nasopharyngeal cancer may be caused by the Epstein-Barr virus (EBV), particularly in people of Asian descent. Also known as human herpesvirus 4, EBV is among the most common human viruses.



Symptoms may include:

- **Persistent sore throat**
- **A lump in the back of the mouth, throat or neck**
- **Trouble breathing or speaking**
- **Difficult or painful swallowing, moving the tongue or opening the mouth wide**
- **Ear pain or decreased hearing**
- **Nose bleeds or coughing up blood**
- **A painless neck mass (HPV-related cancers)**
- **Voice changes**

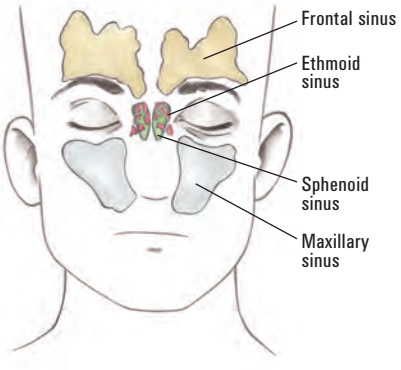
SINUS AND NASAL

The sinuses and the nasal cavity work together to filter, warm and moisten the air you breathe before it reaches your lungs. Cells in the sinuses make mucus to keep your nose from drying out.

You have four paranasal sinuses: in the hollow spaces in the bones around your nose; behind your cheekbones; above, below and between your eyes; and in the center of your skull. Named for the bones that surround them, they are the frontal, ethmoid, sphenoid and maxillary sinuses.

The nasal cavity is a continuation of the nostrils into your nose. It extends to the back of your nose to the nasopharynx above the soft palate. The nasal cavity is divided into a right and left side by your septum.

Cancer typically develops in thin, flat squamous (SKWAY-mus) cells lining the sinuses and nasal cavity. The most common place for this type of cancer to occur is in the maxillary sinuses.



Symptoms may include:

- **Sinus pressure or blocked sinuses that don't clear**
- **Sinus/facial pain or headaches**
- **Runny nose**
- **Nosebleeds**
- **A sore or lump in the nose that doesn't heal**
- **Swelling around the eyes**
- **Pain in upper teeth**
- **Loose teeth or dentures that no longer fit well**
- **Vision changes**
- **Facial numbness**
- **A lump on the face, roof of the mouth or neck**

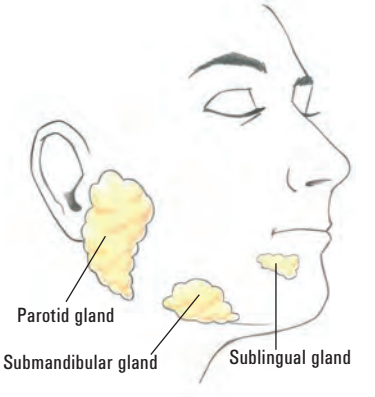
SALIVARY GLAND

Salivary glands produce saliva to help you swallow, chew and digest food and to keep your mouth and throat moist. Saliva contains enzymes that begin the process of breaking down food and antibodies that help prevent mouth and throat infections.

Your head and neck contain major and minor salivary glands, with a set of three major glands on each side of your face. The parotid glands are the largest of the major glands and are located just in front of each ear. The submandibular glands below your mandible (jawbone) are smaller. The sublingual glands under the mouth floor are the smallest. You also have hundreds of microscopic minor salivary glands throughout the lining of your lips and tongue as well as on the roof of your mouth and inside your cheeks, nose, paranasal sinuses, pharynx and larynx.

Tumors most often occur in the parotid glands. Tumors in the minor salivary glands are not common; however, they are more likely to be malignant when they occur.

Salivary gland cancers are sometimes found during routine dental visits or physical exams.



Symptoms may include:

- **Lump in an ear, cheek, jaw, neck, lip or inside the mouth**
- **Trouble swallowing**
- **Difficulty opening your mouth wide**
- **Facial numbness or weakness**
- **Persistent facial pain**

Testing lays the groundwork for treatment planning

Your doctor will use a variety of tests to diagnose your type of head and neck cancer. These tests may include a thorough physical exam, imaging studies, blood tests and biopsy. They are performed to find out where the tumor is, how large it may be, whether it has spread to lymph nodes or other organs, any biomarkers and the type or subtype of the cancer. The results help your doctor classify and stage the cancer, which is used to determine the best treatment options for you.

To classify and stage head and neck cancer, the TNM staging system, developed by the American Joint Committee on Cancer (AJCC), is typically used. 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 indicates whether the lymph nodes show evidence of cancer cells. The number and location of these lymph nodes are important because they show how far the disease has spread. The M category describes metastasis (spread of cancer to another part of the body), if any.

UNDERSTANDING STAGING

A combination of T, N and M are used to assign an overall stage to the cancer. Head and neck cancers may be Stage 0 through Stage IV. Also known as "in situ," Stage 0 is a precursor of an invasive cancer. Stages I and II are generally 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 is further divided into Stages IVA, IVB and IVC. Stages IVA and IVB are locally or regionally advanced disease, and Stage IVC has spread to distant sites, such as the liver, lungs or bone.

These basic stages are designed to group patients who have a similar prognosis (outlook) and is not the same for all types of head and neck cancer. This grouping allows doctors to more accurately predict outcomes for patients depending on the type of treatment they receive. In certain cancers, the stage is also determined by other factors. For throat cancer, the presence of human papillomavirus (HPV) and the location of the cancer cells are considered. For thyroid cancer, the subtype of cancer and age of the patient influence the stage.

Sometimes your doctor will reassess your stage after treatment or if cancer recurs. This is known as restaging. If it is necessary, it typically involves the same diagnostic tests used for the original staging. If a new stage is assigned, it is often preceded by an "r" to denote that it has been restaged and is different from the original stage given at diagnosis.

The staging tables for the six types of head and neck cancer discussed in this guide are available starting on page 21. Look carefully at the table headlines and sections to ensure you read the information that applies to your diagnosis because each has unique staging characteristics.

THE USE OF BIOMARKERS IN HEAD AND NECK CANCERS

Research has discovered some biomarkers that may be associated with certain head and neck cancers, which may help doctors to better diagnose and treat cancer.

Biomarkers are substances, such as genes and molecules, that are produced by cancer cells or other cells of the body in response to cancer. They can be measured in the blood, plasma, urine, cerebrospinal fluid or other body fluids or tissues. They are also known as tumor markers or biological markers. Testing for biomarkers is also known as molecular testing.

Biomarkers are used to diagnose, predict or estimate a prognosis of cancer. Diagnostic biomarkers help determine the type of tumor. A predictive biomarker gives information about the effect of a specific treatment approach. A prognostic biomarker provides information about a person's overall cancer outcome, regardless of therapy. Some biomarkers may also help determine how aggressive (fast growing) a tumor is and may predict long-term survival.

With head and neck cancers, biomarkers are most often tested during staging, and the results help determine treatment. Following are some of the biomarkers that may be tested if you have a head and neck cancer.

Epstein-Barr virus (EBV) is associated with some nasopharyngeal cancers and may be tested to help make a diagnosis as well as assess the response of therapy and monitor for recurrence.

Human papillomavirus (HPV) has strains that are linked to throat cancer, specifically oropharyngeal (see *HPV and cancer*, page 7). HPV is primarily tested with throat cancers as a part of the staging process. Research is still determining if HPV is a biomarker for any of the other types of head and neck cancer.

Genes may be tested to determine a patient's eligibility to receive certain types of targeted therapy. Currently, therapies are approved for people with abnormalities in the *BRAF*, *RET* and *NTRK* genes.

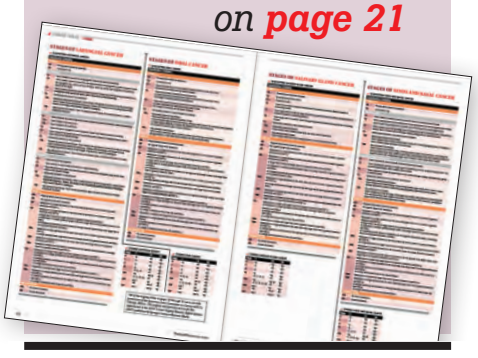
Programmed cell death-ligand 1 (PD-L1) is used as a predictive biomarker to determine if a patient will respond to immunotherapy. At this time, it is the only biomarker to test for a response to immunotherapy in head and neck cancer.

Proteins and growth factors affect how tumor cells develop and survive. They are tested to determine if a person has abnormalities in the vascular endothelial growth factor (*VEGF*), epidermal growth factor receptor (*EGFR*) and the *MEK* protein. Some types of targeted therapy known as tyrosine kinase inhibitors (*TKIs*) are available to treat these abnormalities.

Thyroid hormone levels, such as thyroglobulin, thyroid-stimulating hormone and medullary type-specific tests, which include calcitonin and carcino-embryonic antigen levels, are biomarkers for thyroid cancer.

More biomarkers are being evaluated in clinical trials to determine the role they may play in either diagnosing or treating head and neck cancers. Treatments that target biomarkers are also being researched. ■

Staging tables begin on page 21



Take an active role in your care by searching for a clinical trial

As medical and scientific teams continue to learn more about how head and neck cancer begins and spreads, they test new and improved treatments by conducting clinical trials. Once thought of as a last resort, clinical trials are increasingly being considered as a first treatment option. Advances made as a result of these trials bring more hope to people whose lives are affected by the different types of head and neck cancer.

Clinical trials evaluate new methods for improving different areas of cancer care. Many research studies are underway for all stages of head and neck cancer. Some are identifying drug therapies to treat genetic mutations. Others are focused on better screening methods for prevention and early detection as well as evaluating the benefits of certain drug therapies used alone, in combination with other therapies or in a different order. Still others are adjusting known effective treatment types to attempt to decrease side effects without altering effectiveness.

As with any cancer treatment, a clinical trial presents potential risks and side effects. It may require more medical appointments and/or tests than you would ordinarily have scheduled. Ask in advance to make sure you will be able to rearrange your schedules for work, school, family commitments and other obligations to accommodate the appointments required to meet the trial's protocol.

Receiving your cancer treatment through a clinical trial may offer these benefits:

- Access to state-of-the-art cancer treatment that is not available outside a clinical trial.
- A high level of care from being monitored by the clinical trial's medical team in addition to your regular oncologist.
- A role in advancing cancer research by helping to improve treatment options for future patients.
- A treatment with more manageable side effects that offers a better quality of life.

As you and your doctor discuss this potential treatment option, keep in mind that many trials take place at the same time, making it difficult for your doctor to know about all of them. Finding a trial that you qualify for takes research, and that is where you come in. While your health care team is exploring potential trials, you can look for them online, too.

Navigating some search sites can be confusing. To help prepare you, we have created mock screens below as an example of what you may see as you look for a trial that may apply to you. ■

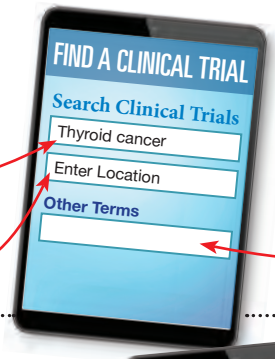
HOW TO SEARCH FOR A CLINICAL TRIAL

Before you begin, have your exact diagnosis, pathology report and details of your previous cancer treatments on hand to help determine if you meet the basic eligibility criteria. Then, start by using the list of clinical trial sites below. Your doctor may recommend additional sites.

[STEP 1] FILL IN YOUR INFORMATION

Enter Your Diagnosis
Enter "Thyroid cancer." To further customize the search, select applicable eligibility criteria, such as age and gender, on the results screen.

Desired Location
If you prefer a clinical trial close to home, enter your home address. Enter additional locations if you're willing and able to travel for treatment.



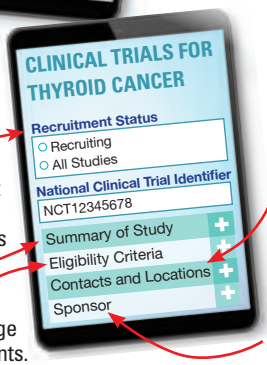
Other Terms
You can refine your search even more by adding a particular treatment type or genetic mutation. You can also add a National Clinical Trial identifier, which is a unique eight-digit code preceded by "NCT" that is assigned to each trial.

[STEP 2] READ YOUR SEARCH RESULTS

Recruitment Status
This indicates whether the trial is actively seeking patients, not yet recruiting or otherwise inactive. The status will change, so check for updates.

Summary of Study
Here you'll find details about the purpose of the clinical trial and the treatment being studied. This section is usually written for health care providers, so it may be difficult to understand. In that case, print out the information to discuss with your doctor.

Eligibility Criteria
This outlines the criteria you must meet to be eligible for the trial, such as the stage of disease, sites of metastasis, overall health requirements and previous treatments.



Contacts and Locations
This may contain contact information for the clinical trial investigators, staff or sponsors who may be able to provide more details about the study.

Sponsor
This is the entity responsible for the clinical trial. It may be a pharmaceutical or biotechnology company, a university, the National Cancer Institute or others.

CLINICAL TRIAL RESOURCES

CenterWatch: www.centerwatch.com, 866-219-3440 / **National Cancer Institute:** www.cancer.gov/clinicaltrials
ClinicalTrials.gov: www.clinicaltrials.gov / **Lazarex Cancer Foundation:** www.lazarex.org, 877-866-9523
Cancer Support Community: www.cancersupportcommunity.org/find-clinical-trial, 888-793-9355 / **NCI Cancer Information Service:** 800-422-6237
Center for Information & Study on Clinical Research Participation: www.searchclinicaltrials.org

Partner with your doctor to make decisions confidently

Once you receive a diagnosis, you will work closely with your doctor to develop a treatment plan. Several factors will be considered, such as the stage of disease and whether it has metastasized, your age, and results of risk assessments, predictive tests and molecular testing.

During treatment planning, it is important to discuss your expectations for quality of life. Your doctor may ask you about your smoking status to determine the potential effectiveness of radiation therapy and surgical treatments. Smoking is known to reduce treatment effectiveness and is also associated with an increased risk of second cancers.

Cancers of the head and neck can affect many basic functions. Your doctor will focus on preserving – as much as possible – your ability to speak, eat and breathe normally. Be open and honest about the side effects you are most concerned about, and find out if and how they can be managed. Some may be temporary and others may be permanent. Try to learn as much as possible before you begin treatment so you are not surprised later. It is crucial that you are comfortable with your decision.

Treatments are described as first line or second line. First-line therapy is the first treatment used. Second-line therapy is given when the first-line therapy doesn't work or is no longer effective. You may also hear a treatment called standard of care, which refers to the best treatment known for a specific type and stage of cancer.

The following treatments are common for head and neck cancers. For more specific options, go to *Treatments by Cancer Type*, page 8.

TYPES OF TREATMENT

Surgery is the primary method for treating a solid tumor. Removing it may offer the best chance of controlling the disease and keeping it from spreading, especially for people with early-stage disease. Many types of surgery are available to treat head and neck cancers (see *Treatments by Cancer Type,* page 8). Surgery may also be used to stage the cancer or to relieve or prevent symptoms that might otherwise occur later. A neck dissection, which is the removal of lymph nodes and surrounding tissue from the neck, is a common procedure that may be used. Surgery may also accompany other treatment types.

Reconstructive surgery may be an option if appearance or functionality needs to be restored (see *Reconstruction & Rehabilitation*, page 17).

Radiation therapy uses high-energy radiation to destroy cancer cells and shrink tumors. Some people with localized disease or bone pain that does not lessen with chemotherapy may receive it to specific parts of the body.

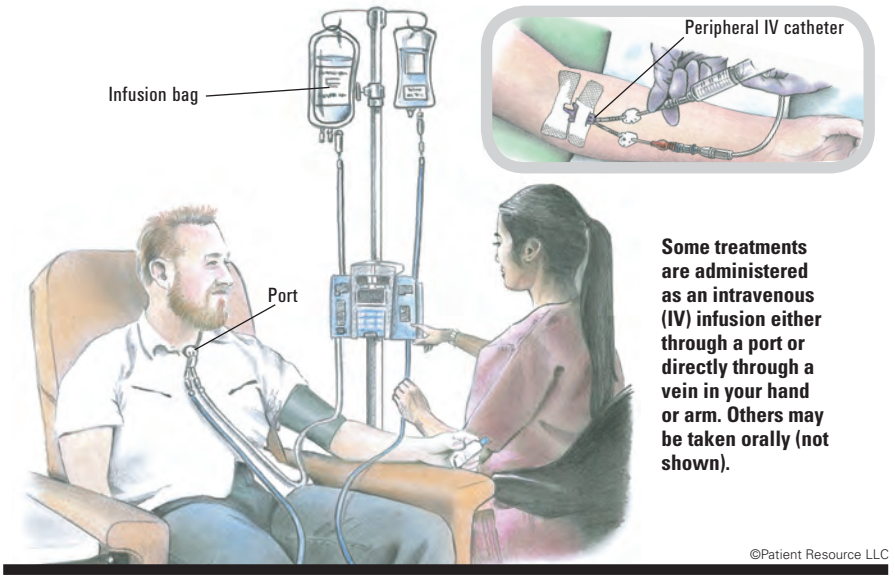
External-beam radiation therapy (EBRT) is delivered from a machine and is used to treat many types of cancer. Different types of EBRT are available and include proton therapy, three-dimensional conformal radiation therapy (3D-CRT), intensity-modulated radiation therapy (IMRT), hyperfractionated therapy and stereotactic radiosurgery.

Internal radiation therapy, also called brachytherapy, uses a radioactive substance sealed in needles, seeds, wires or catheters that are placed directly into or near the cancer.

Radioactive iodine treatment involves giving radioactive iodine (I-131) in liquid or pill form to treat some forms of thyroid cancer. It may be used after surgery in patients with thyroid cancer who are at increased risk of recurrence. The radioactive iodine will concentrate in any remaining thyroid tissue, and the radiation will kill the cancer cells.

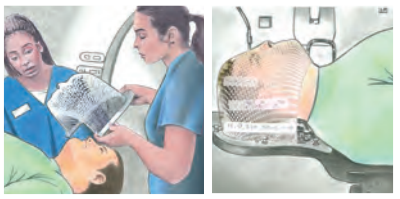
Drug therapy is systemic therapy that travels throughout your body and may include chemotherapy, immunotherapy or targeted therapy (see Figure 1).

FIGURE 1
DRUG THERAPY



Some treatments are administered as an intravenous (IV) infusion either through a port or directly through a vein in your hand or arm. Others may be taken orally (not shown).

THERMOPLASTIC MASK:
A necessary safety measure during radiation therapy



➡ **For radiation therapy** to be most effective, the radiation beams must target the same spot every time. In most cases, semi-permanent marks or permanent tattoos are placed on your skin to indicate the exact location the radiation beams must hit to reach the tumor. To ensure your safety, you must be in the same position for every treatment. Body molds or other immobilizing devices, such as a special mesh head mask called a thermoplastic mask, may be necessary. The mask is created from a mold of your face and head and is a tight fit. Wearing it and being unable to move can be upsetting, especially if you are claustrophobic. Your treatment team will help make you as comfortable as possible, so tell them if you feel anxious. If necessary, your doctor may prescribe medication to help you relax.

Chemotherapy uses drugs to kill rapidly multiplying cells throughout the body. It is a type of systemic therapy. It may be given intravenously (IV) through a small tube inserted into a vein or port, or taken orally as a pill. It is typically delivered in cycles, with treatment periods followed by rest periods to give your body time to recover. A specific strategy may consist of a single chemotherapy drug, a combination given at the same time or drugs given one after another. Chemotherapy may be used alone or with other forms of treatment.

Immunotherapy harnesses the potential of the body's own immune system to recognize and destroy cancer cells. By training the immune system to respond to cancer, this strategy has the potential for a response that can extend beyond the end of treatment. The U.S. Food and Drug Administration has approved one type of immunotherapy for head and neck cancers — immune checkpoint inhibitors. They target the proteins PD-1 (programmed cell death protein 1) and PD-L1 (programmed cell death-ligand 1) found on cells of the immune system and cancer, respectively. Normally when these proteins interact, the immune system is shut down. The immune checkpoint inhibitors block this activity, thereby boosting the immune system's cancer-fighting response.

Targeted therapy uses drugs or other substances to identify and attack specific types of cancer cells. Unlike chemotherapy, which attacks healthy cells as well as cancer cells, targeted therapy is designed to affect only cancer cells. Some targeted therapy drugs are oral medications given in pill form, and others are given by IV. Some may be given alone or in combination with other drug therapies. When given for head and neck cancers, these drugs target specific genes, such as *BRAF, RET* and *NTRK*, or proteins and growth factors, including *VEGF*, *EGFR* and *MEK*. It may be used with or without chemotherapy and after surgery for advanced stage head and neck cancers.

Chemoradiation combines chemotherapy with radiation therapy. It makes cancer cells more sensitive to radiation, making it easier for the radiation to kill them.

Clinical trials are another possible option that could be part of your treatment plan. They are medical research studies that may offer access to leading-edge treatments not yet widely available.

It is important to let your health care team know if you are interested in learning more about clinical trials because, depending on your diagnosis, a trial could be your best first treatment option. You may also consider participating in a clinical trial at any of the following times:

- If your current treatment is no longer as effective as expected
- If a new biomarker that can be treated with a known therapy is revealed after follow-up testing
- At cancer progression
- As a way to reduce side effects to improve your quality of life

From early-stage to metastatic head and neck cancers, a number of trials are typically underway at any given time. Those trials may focus on various aspects of head and neck cancer, including the following:

- New types of drugs, including immunotherapy and targeted therapy
- New combinations of therapies
- Radiofrequency thermal ablation
- Gene therapy
- Photodynamic therapy
- Proton therapy
- Additional supportive care options

As you and your doctor discuss this potentially valuable treatment option, keep in mind that you can take an active role in your treatment by searching for clinical trials on your own. Not only does looking for a potential trial offer some control at a time when you may feel like you do not have much, being proactive helps your health care team, too. Because trials take place in many locations, from local doctors' offices to major treatment centers, it is not always possible for them to know about all of them (see *Clinical Trials*, page 5). ■

SOME HEAD AND NECK CANCER DRUGS

These therapies may be used alone or in combination. For additional combination therapies your doctor might suggest, go to PatientResource.com/Head_and_Neck_Treatment.aspx

- bleomycin sulfate (Blenoxane)
- cabozantinib (Cabometyx, Cometriq)
- cetuximab (Erbitux)
- cisplatin (Platinol)
- dabrafenib (Tafinlar) and trametinib (Mekinist)
- docetaxel (Taxotere)
- doxorubicin hydrochloride (Adriamycin)
- entrectinib (Rozlytrek)
- hydroxyurea (Hydrea)
- larotrectinib (Vitrakvi)
- lenvatinib (Lenvima)
- methotrexate sodium (Methotrexate LPF)
- nivolumab (Opdivo)
- pembrolizumab (Keytruda)
- pralsetinib (Gavreto)
- selpercatinib (Retevmo)
- sorafenib (Nexavar)
- vandetanib (Caprelsa)

As of 10/12/21

HPV and CANCER

Human papillomavirus (HPV), a virus that can lead to cancer later in life, is the most common sexually transmitted disease in the United States. Most people acquire it at some point in their lifetime, and the majority are able to heal from the infection, often without symptoms. If the infection does not resolve, however, it may turn into cancer.

More than 150 types of HPV exist and about 40 types can be spread through sexual contact from the skin and mucous membranes (lining of the mouth, throat or genital tract). HPV-related throat cancers are increasing fastest among men in the United States. Nine strains of HPV are known to cause cancer, with HPV being linked to approximately 70 percent of oropharyngeal (throat) cancers. Oropharyngeal cancers affect the middle part of the throat, including the base of the tongue and tonsils. HPV is also linked to anal, cervical, penile, vaginal and vulvar cancers.

If your doctor suspected throat cancer, you were likely tested for the HPV biomarker. Its presence helped your doctor appropriately stage the cancer and determine the treatment that may be most effective for you (see *Stages of Throat Cancer*, page 23). HPV biomarker testing may also be conducted to predict an HPV-associated throat cancer recurrence.

Your health care team and the listings in the back of this guide are valuable resources for learning more about HPV and how your diagnosis may affect your loved ones. Ask your doctor about the recommended screenings and vaccinations for your partner and your children, as well as the potential benefit of being vaccinated after receiving your head and neck cancer diagnosis. Although the HPV vaccination does not treat existing infections or diseases (this is why the HPV vaccine works best when given before any exposure to HPV), it can prevent new infections with the types of HPV that most often cause oropharyngeal and other cancers.

Three vaccines are approved by the U.S. Food and Drug Administration (FDA) for male and female children and young adults, 9 to 26 years old, to provide protection against new HPV infections. The 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). Gardasil 9's approval was recently expanded to include males and females ages 27 through 45 years.

Making certain lifestyle choices may help decrease the chance of getting the virus, such as limiting your use of alcohol and avoiding all tobacco products, including smokeless products, as they may increase your risk of developing oropharyngeal cancers. Additionally, using condoms and dental dams properly may lower the chance that HPV is passed from one person to another.

Explore the therapies that may be available to you

You may need one or possibly several different types of treatment. In this article, some of the most common treatments by cancer type are outlined. Keep in mind that in addition to these treatments, your doctor may discuss others, including clinical trials. A variety of trials are underway, such as those to find new drug therapies and more effective types of radiation therapy. Ask your doctor if you may be a candidate for a clinical trial (see *Clinical Trials*, page 5).

All treatments, including those used in clinical trials, have potential benefits, risks, side effects and late effects. Some may also require reconstructive procedures that take place during surgery to remove the cancer or in a separate procedure. Rehabilitation may also be necessary (see *Reconstruction & Rehabilitation*, page 17).

As you and your loved ones discuss options with your health care team, be sure to discuss the goal of your treatment plan. Is it to cure the cancer? Is it to control the cancer while relieving symptoms? How will the effects of treatment be managed? Ask these key questions to ensure you understand what each treatment entails and how it may affect your quality of life. It is important to set realistic expectations as you move forward.

THYROID CANCER

One or more of the following therapies may be part of your treatment plan.

SURGERY

Surgery to remove all or most of the thyroid is the most common treatment for thyroid cancer, and various procedures and techniques may be available.

Lobectomy, also called hemithyroidectomy, may be used in some low-risk cases when only half of the thyroid needs to be removed.

Total thyroidectomy is used when the entire thyroid gland is removed. As a result, thyroid hormone therapy must be taken because thyroid hormones can no longer be produced in the body. This hormone replacement medication can be taken as a pill. Taking calcium and vitamin D supplements may also be necessary if the parathyroid gland function is affected by surgery. Your surgeon may also remove lymph nodes in the neck to see if the cancer has spread.

RADIOACTIVE IODINE TREATMENT

The thyroid absorbs almost all iodine that enters the body. Radioactive iodine treatment can be used to destroy remaining thyroid cells that were not removed by surgery or that have spread beyond what can be removed with surgery. This involves giving radioactive iodine (I-131) in liquid or pill form. The radioactive iodine will concentrate in any remaining thyroid tissue, 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 does not work in medullary thyroid cancer or anaplastic thyroid cancer because the cancer cells do not take up iodine.

RADIATION THERAPY

This treatment is more often used as part of treatment for medullary and anaplastic thyroid cancer. It is usually given after surgery (adjuvant therapy) and concentrates on targeted cancer cells in a specific area. External-beam radiation therapy is usually given for about six weeks, once a day for 15 to 30 minutes, five days a week.

DRUG THERAPY

Immunotherapy in the form of immune checkpoint inhibitors may be an option for treating recurrent or metastatic thyroid cancer. Immunotherapy uses your own immune system to try to keep the cancer from growing and spreading. Talk with your doctor to find out if you may be a candidate for immunotherapy.

Targeted therapy drugs, in the form of tyrosine kinase inhibitors, may be given to treat certain types of thyroid cancer. They may be an option if specific molecular (genetic) abnormalities are found in the tumor. Some of these abnormalities include a neurotrophic tyrosine receptor kinase (*NTRK*) genetic fusion, a *BRAF V600E* gene mutation and *RET* mutation-positive cancers. In some cases, targeted therapy may be used to treat certain types of metastatic thyroid cancer.

Chemotherapy may be used if other therapies are not successful.

WATCHFUL WAITING

You and your doctor may choose to closely monitor your condition and begin active treatment once symptoms begin. This option offers the possibility of avoiding the side effects of treatment for as long as possible, and hopefully, without affecting the outcome.

ORAL CANCER

Treating oral cancer may affect the ability to speak and eat normally and may alter appearance. When deciding on treatment options with your doctor, you are encouraged to discuss reconstructive options as well. Many surgeons that remove head and neck cancer are also trained in reconstruction and can safely perform both parts of the surgery.

One or more of the following options may be part of your treatment plan.

SURGERY

Surgery is typically a recommended treatment for oral cavity cancers. It is performed to remove small, early-stage tumors of the lip, gums, roof of the mouth, front of the tongue, floor of the mouth and inside the cheeks. It may also be used to remove larger tumors and those that have metastasized (spread) to nearby tissue or lymph nodes in the neck. The goal of surgery is to remove the tumor; however, your surgeon will also focus on preserving as much normal function as possible. Various procedures and techniques may include the following.

Tumor resection removes the tumor and a margin of healthy tissue surrounding it.

Glossectomy removes all or part of the tongue. A partial glossectomy removes less than half of the tongue, a hemiglossectomy removes half of the tongue, and a subtotal or total glossectomy removes most or all of the oral tongue.

Maxillectomy removes all or part of the hard palate.

Mandibulectomy removes all or part of the jawbone.

Composite resection is common in advanced oral cancers and involves removal of multiple areas involved with cancer and can include removing part of the jaw, tongue, floor of mouth, etc.

Mohs micrographic surgery may be recommended for some types of lip cancer. After removing the tumor, the surgeon removes a tiny fragment of tissue that had surrounded it and examines it under a microscope. The process is repeated until clear margins are seen. This type of procedure is performed by a dermatologist.

Neck dissection removes some of the lymph

nodes in the neck when the cancer has spread to the neck or if there is a significant risk that cancer will spread to the lymph nodes.

Reconstructive procedures may be recommended to repair or replace removed areas, improve the ability to eat and speak, and help restore appearance as much as possible (see *Reconstruction & Rehabilitation*, page 17).

RADIATION THERAPY

External-beam radiation therapy (EBRT) or internal radiation therapy (brachytherapy) may be used alone if you are not a candidate for surgery (due to other medical problems or the extent of the cancer). This does not cure the cancer but tries to slow down the growth and spread, and alleviate symptoms. More commonly, radiation is used after surgery (adjuvant therapy) to destroy remaining cancer cells and reduce the risk of the cancer recurring. Radiation therapy may also be used alone or with chemotherapy (chemoradiation) for cancer that has a higher risk of recurring.

Before beginning any type of radiation therapy, you will be required to have a thorough dental exam to address existing problems with a dentist experienced in treating people with cancer (see *Dental and Oral Side Effects*, page 15). If you smoke, be aware that research indicates radiation therapy is more effective in patients who have stopped smoking before beginning treatment.

DRUG THERAPY

Chemotherapy can be used for oral cavity cancer if you are not a candidate for surgery. This can be given with the goal to slow down the growth and spread of the cancer. It is more commonly used as adjuvant treatment following surgery if your cancer has aggressive features and a higher risk of returning.

Immunotherapy in the form of immune checkpoint inhibitors may be part of your treatment plan if you have recurrent or metastatic oral cancer.

Targeted therapy may be an option to treat types of oral cancer that contain specific ge-netic abnormalities, proteins or growth factors. Targeted therapy drugs may be given alone or in combination with chemotherapy or radia-tion therapy.

LARYNGEAL CANCER

Because the larynx involves your ability to speak, eat and breathe, the primary goal of your health care team will be to focus on removing, destroying or shrinking the tumor and preserving (as much as possible) your larynx. Your doctor will complete a pre-treatment evaluation of your voice, breathing and swallowing functions so that your abilities can be monitored throughout treatment.

Following are some of the therapies your doctor may use alone or in combination.

SURGERY

These surgical procedures, beginning with least invasive, may be recommended.

Vocal cord stripping removes the superficial layers of tissue on the vocal cords. This technique can be done for a biopsy sample or to treat pre-cancers and early-stage cancers of the vocal cords. Most people can eat, speak and breathe normally after recovery.

Endoscopic resection is performed through an endoscope and is used to remove cancer that is confined to the vocal cords or is early stage.

Transoral laser microsurgery (TLM) avoids the need for neck incisions and may be used to remove laryngeal cancers that are superficial or limited in extent.

Cordectomy removes all or part of a vocal cord and may be used to remove small cancers of the glottis. Removing part of a vocal cord typically causes permanent hoarseness and may cause temporary swallowing difficulties.

Laryngectomy removes all or part of the larynx. Your ability to speak after recovering from surgery depends on how much of the larynx is removed.

- *Supraglottic laryngectomy* removes the part of the larynx above the vocal cords and may be used when tumors are confined to the supraglottis. Speech therapy will be necessary after recovery, and the effect on speech varies.
- *Vertical hemilaryngectomy* may be used to treat cancers of the vocal cords. It involves removing one vocal cord, leaving the other intact. You may still have some ability to speak, but your speech will change.
- *Supracricoid laryngectomy* removes a large part of the larynx, including both vocal cords. Your ability to speak is preserved, although how you speak will change.

All of the above types of laryngectomy also affect your ability to safely swallow. Most patients require at least a temporary feeding tube during recovery. Many patients will also need a tracheostomy tube after surgery that may be removed once everything is healed and the swelling has resolved. Patients with underlying lung problems, such as COPD or emphysema, are generally not candidates for this type of surgery.

Total laryngectomy removes the entire larynx and vocal cords. This surgery permanently separates the trachea (windpipe) from the esophagus and then attaches the trachea to a hole created in the front of the neck called a stoma (see *Living with a stoma*, page 17). The stoma is the new airway to breathe through instead of breathing through your mouth and nose. A total laryngectomy may be used to treat advanced or recurrent cancers when there are no other viable options. Following recovery, you must learn new ways to communicate because normal speech is no longer possible. Most of the time, you will be able to swallow after you heal from surgery. If your doctor performs a laryngectomy, you may also have reconstructive surgery (see *Reconstruction & Rehabilitation*, page 17).

Depending on the exact location and stage of your tumor, neck dissection to remove some lymph nodes in your neck may be recommended.

RADIATION THERAPY

Radiation therapy with or without chemotherapy is an option for many patients with laryngeal cancer. This is often called organ preservation treatment — meaning you keep your larynx (voice box). Radiation is typically an option for patients with T1-T3 cancers. Radiation may also be used for patients with more advanced tumors that are not candidates for surgery. External-beam radiation therapy (EBRT) is most commonly used to treat laryngeal cancer. It is typically given once daily for a set amount of time. Forms of EBRT used include three-dimensional conformal radiation therapy (3D-CRT) and intensity-modulated radiation therapy (IMRT). Another type, hyperfractionated radiation therapy, involves a daily total dose of radiation that is smaller than usual, given in two doses and treatments daily over the same time as a standard course of radiation therapy.

Chemotherapy often enhances the effectiveness of radiation therapy, so it is often given with chemotherapy in a combination called chemoradiation therapy for more advanced cancers. It may be used if surgery is not an option.

Radiation with or without chemotherapy may be recommended following surgery as adjuvant treatment for advanced stage cancers. This therapy may be used to eliminate any remaining cancer cells and to lower the risk of recurrence.

Pre-treatment evaluation by an oncologic dentist and speech pathologist may be helpful before receiving radiation therapy (see *Dental and Oral Side Effects*, page 15). Smoking can interfere with the effectiveness of this treatment, so it is recommended that you stop before beginning therapy.

DRUG THERAPY

Chemotherapy may be used, however, chemoradiation may be the primary treatment for some cases of laryngeal cancer, and if no traces of the tumor remain, surgery may not be necessary. Chemoradiation therapy may also be used after surgery (adjuvant therapy) to decrease the likelihood of cancer recurrence.

Immunotherapy in the form of immune checkpoint inhibitors may be used to treat recurrent or metastatic laryngeal cancer if surgery or chemoradiation is not an option.

Targeted therapy may be used to treat types of laryngeal cancer that contain specific genetic abnormalities, proteins or growth factors. Targeted therapies may be given alone or with chemotherapy or radiation therapy.

THROAT CANCER

Preserving normal function as much as possible during treatment will be a priority. Before making treatment recommendations, your doctor will consider the part of the throat where the cancer occurs, whether the cancer is primary or recurrent, and the presence of certain biomarkers related to the human papillomavirus (HPV).

It is important for you to know if your diagnosis is HPV+ or HPV-. Ask your doctor if you are unsure. Look carefully at the staging table headlines in this guide to ensure you read the information that applies to your diagnosis (see *Stages of Throat Cancer*, page 23).

Your doctor may suggest one or more of the following options.

SURGERY

Surgery is commonly used to treat oropharyngeal and hypopharyngeal cancers. It is rarely used for nasopharyngeal cancers because the area can be difficult to reach. However, it may be used to remove lymph nodes in cases of nasopharyngeal cancer.

One or more of the following surgeries may be used.

For early stage oropharyngeal cancers (especially HPV+ tumors), **transoral robotic surgery** (TORS) is often an option. This approach can be used to remove cancers from the tonsils or the back one-third of your tongue called the base of tongue.

Radical tonsillectomy removes the tonsil as well as a cuff of tissue around the tonsil including part of the soft palate and pharynx.

Base of tongue resection removes the tumor from the back one-third of the tongue.

Partial pharyngectomy removes part of the pharynx (throat).

Laryngopharyngectomy to remove tumors in the hypopharynx. This is the removal of the larynx (voice box), the vocal folds and pharynx. With this approach, a surgeon reconstructs the pharynx and the surgeon creates a stoma for breathing (see *Living with a stoma*, page 17).

A neck dissection to remove lymph nodes may also be performed.

Reconstructive surgery may be recommended to restore function or appearance and replace missing tissue. This surgery would take place at the same time the cancer is being removed (see *Reconstruction & Rehabilitation*, page 17).

RADIATION THERAPY

Radiation therapy may be given alone or with chemotherapy (chemoradiation) as a first-line treatment for some throat cancers in which surgery is not a good option. The most common type of radiation therapy used to treat throat cancers is external-beam radiation therapy (EBRT) and includes intensity-modulated radiation therapy (IMRT), stereotactic radiation therapy and proton therapy, with IMRT being the most commonly used and well researched.

Hyperfractionated radiation therapy, in which the radiation is given in smaller doses but more frequently, may be used for certain cases of advanced throat cancer to improve the way the tumor responds to treatment.

Radiation with or without chemotherapy may be recommended following surgery as adjuvant treatment for advanced stage cancers. This therapy may be used to eliminate any remaining cancer cells and to lower the risk of recurrence.

DRUG THERAPY

Chemoradiation may be an option for the first treatment used. Chemotherapy given alone may be used to treat recurrent cancer (cancer that has returned) or cancers that are not surgically resectable. In this case, the goal of treatment may be to prevent growth and spread as opposed to cure.

Chemotherapy may be given after surgery (adjuvant therapy) with radiation therapy (chemoradiation) if the risk for recurrence is high.

For nasopharyngeal cancers, additional chemotherapy may be given before starting combined chemoradiation treatment.

Immunotherapy in the form of immune checkpoint inhibitors may be an option for treating certain recurrent or metastatic throat cancers.

Targeted therapy drugs may be an option to treat types of throat cancer that contain specific genetic abnormalities, proteins or growth factors. Targeted therapy drugs may be given alone or in combination with chemotherapy or radiation therapy.

SINUS AND NASAL CANCER

One or more of the following options, or a clinical trial, may be part of your treatment plan.

SURGERY

Surgery may be used on any stage of sinus and nasal cancer, and it may be the only treatment needed for early-stage cancer. The surgeon will remove the cancer and some surrounding bone or other nearby tissues. Many types are available. Your doctor will consider the location and stage of your cancer to choose the appropriate surgery for you.

Many early sinus and nasal cancers can be removed endoscopically (with a thin, lighted camera) and do not require incisions on the face. However, many advanced tumors will require external incisions for adequate removal.

Wide local excision is a common surgery for the removal of the tumor and an area of normal tissue around it. It may be used if the cancer is found in the nasal cavity. If the tumor is found in the septum (dividing wall of the nose), the whole septum may be removed.

Medial maxillectomy may be used to treat a tumor in the side wall of the nasal cavity and may involve removing the side wall.

Maxillectomy may be done if the tumor has grown into the maxillary sinus. A maxillectomy may involve removal of bone from the roof of the mouth, part or all of the eye socket, part of the cheekbone, upper teeth and/or the bony part of the upper nose. In very advanced cancers that involve the eye itself, an exenteration may be necessary which includes removal of the eye.

Endoscopic ethmoidectomy may be used if the tumor is small and found only in the ethmoid sinuses. This involves the use of an endoscope (a thin, lighted camera) to reach the ethmoid sinuses through the nose.

External ethmoidectomy is an option if the tumor is small and found only in the ethmoid sinuses. This 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.

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 a **neck dissection** (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 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.

After surgery to remove the cancer, **reconstructive surgery** may be recommended to restore functional ability and/or appearance. Missing tissue, skin or bone may be replaced during this surgery (see *Reconstruction & Rehabilitation*, page 17).

RADIATION THERAPY

Radiation therapy is generally used for cancers in the sphenoid sinuses because these areas are difficult to reach surgically. It may be the main treatment if your general health is too poor for surgery. Radiation therapy can be used after surgery as adjuvant treatment. It may also be combined with chemotherapy (chemoradiation).

How radiation therapy is delivered depends on the type and stage of the cancer. External-beam radiation therapy in the form of three-dimensional conformal radiation therapy (3D-CRT) and intensity-modulated radiation therapy (IMRT), or internal radiation therapy, also known as brachytherapy, may be used. Some patients may benefit from proton therapy depending on the location of the tumor.

DRUG THERAPY

Chemotherapy may be given before surgery (neoadjuvant therapy) or after surgery (adjuvant therapy). It may be combined with radiation therapy (chemoradiation). Chemotherapy for sinus and nasal cancers is usually given when the disease is advanced.

Immunotherapy in the form of immune checkpoint inhibitors may be part of your treatment plan if you have a certain type of recurrent or metastatic sinus and nasal cancer.

Targeted therapy may be an option to treat certain types of sinus and nasal cancer. Targeted therapy drugs may be used with or without chemotherapy and after surgery for advanced cancers.

SALIVARY GLAND CANCER

When your doctor develops your treatment plan, multiple factors are considered, including the subtype, stage and grade of your cancer. Multiple subtypes have been identified in salivary gland cancer.

Grading indicates how abnormal the cells look under a microscope in comparison to healthy cells. Low-grade cancer tends to spread more slowly than high-grade cancer.

Your overall health, the impact to your speech, chewing and swallowing, and your preferences are also considered. To ensure you feel informed, talk with your doctor about the benefits and risks as well as the potential side effects and late effects of each type of therapy before making decisions.

One or more of the following options, alone or in combination, may be part of your treatment plan.

SURGERY

The most common treatment for salivary gland cancer is surgery to remove the tumor and surrounding tissue. Most salivary gland cancers occur in the parotid glands and are often treated with one of the following procedures.

Superficial parotidectomy may be used to remove cancer in the outside part of the parotid gland, also known as the superficial lobe. This involves removing the lobe.

Total parotidectomy to remove the entire parotid gland may be used if the cancer extends to deeper tissues. Removal of the facial nerve may be required, which would affect facial movement.

Other surgical procedures include endoscopic surgery, removal of the submandibular or sublingual glands, and a lymph node dissection (lymphadenectomy) to remove lymph nodes in the neck.

More than one surgery may be needed to treat the cancer and to repair the area (see *Reconstruction & Rehabilitation*, page 17).

RADIATION THERAPY

For high grade or advanced salivary gland cancers, radiation therapy after surgery (adjuvant therapy) is often recommended to kill remaining cancer cells. If surgery is not an option, radiation may be the main treatment, but radiation treatment may not be effective alone against some salivary gland tumors. It is sometimes used to manage symptoms of pain, bleeding or trouble swallowing and in cases of recurrent or advanced salivary gland cancer.

Two main types of radiation may be used. External-beam radiation therapy (EBRT) uses a machine outside the body to send radiation toward the cancer. Different types of EBRT are available and include intensity-modulated radiation therapy and proton therapy, which uses charged particles called protons directed to precise locations within the body.

Internal radiation therapy, also called brachytherapy, uses a radioactive substance sealed in needles, seeds, wires or catheters that are placed directly into or near the cancer.

Radiation therapy may also be combined with chemotherapy, also known as chemoradiation.

DRUG THERAPY

Immunotherapy in the form of immune checkpoint inhibitors may be used to treat recurrent or metastatic salivary gland cancer that has stopped responding to chemotherapy. Clinical trials may include other immunotherapy options.

Targeted therapy may be an option for some subtypes of salivary gland cancer. This type of personalized treatment attacks the source of a tumor's growth, focusing on certain parts of cells and the signals that cause them to grow unchecked or keep from dying. These signals are often sent by proteins called tyrosine kinases. In salivary gland cancer, some of these drugs also target specific genes or molecular alterations, including neurotrophic tyrosine receptor kinase (*NTRK*).

Chemotherapy may be used to treat late-stage salivary gland cancer or to treat symptoms. ■

10 things to know about being a caregiver

Your hard work and support can make a world of difference to a loved one diagnosed with a form of head and neck cancer. Attending and keeping track of medical appointments, managing medications, running errands and cooking meals that are healthy and easy to eat are just some ways you may help. As you prepare to take on these important responsibilities, consider the following suggestions.

1 Get the "OK" to receive medical information. Be sure you are authorized to communicate with your loved one's health care team, access medical information, renew prescriptions and more. If you are unsure about the forms you may need to sign, ask a member of the health care team.

2 Meet the health care team. Introduce yourself to the doctors, nurse navigator, speech therapist, dietitian and other key people on the team. Ask questions to help you learn about your loved one's diagnosis, treatments and unique needs. Determine the best ways and times to contact them. Building strong relationships will make it easier to communicate openly and honestly with them.

3 Recognize and report symptoms and side effects. It is often difficult for people undergoing cancer treatment to accurately remember and describe symptoms to their doctors. Track symptoms at home with detailed notes to take to appointments along with a running list of questions. Speak up to help clarify details about the frequency, intensity and duration of side effects. Before treatment begins, find out what symptoms should warrant a call to the doctor, a visit to urgent care or emergency medical attention.

4 Manage the calendar. Maintain a paper calendar or one on your phone to track doctor's appointments, blood work and other tests.

5 Help manage cognitive and physical limitations. A cancer diagnosis and/or cancer treatment can affect your loved one's mental focus, memory, thinking skills, emotional stability and stress level — all of which can significantly impair communication skills. Physical limitations may also affect the ability to communicate clearly and effectively.

6 Explore telehealth. Find out if your loved one's medical team offers virtual visits and if they are covered by insurance. This option enables your loved one to stay home if he or she feels unwell or finds it physically challenging to go to an appointment. It is more convenient for people who live far from the medical office, helps limit potential exposure to infections in clinics and hospitals, and offers an easy way to report symptoms or complications between visits.

7 Serve as "Information Central." You and your loved one can get exhausted as family and friends call with questions about what the doctor said, what the treatment plan is, how the patient is feeling and how they can help. Create an email group so you can send one email with all of the information your loved one is comfortable including. This will dramatically reduce phone calls and individual emails as well as ensure that everyone is getting the same information and at the same time. Siblings, for example, are all informed at once rather than one being communicated with first.

8 Be a good listener. Facing cancer can be overwhelming, and sometimes your loved one may just need someone to talk to. Simply listening is more helpful than you may realize.

9 Take care of yourself. You will be more effective if you maintain your own health. Eat right, exercise, keep medical appointments and give yourself time off. Let family and friends help. Create a list of things that can be delegated to others. People want to help and most are sincere.

10 Find online support groups and resources. Taking on the role of a caregiver can be challenging, but you don't have to do it alone. There are resources to help, such as HNC Living Foundation (hncliving.org) and KEY+YOU (keyplusyou.com). See *Assistance & Support*, page 19, for more resources. ■

THE HEALTH CARE TEAM

Meet the specialists on your loved one's health care team

➥ *People with head and neck cancer may consult with multiple doctors, specialists and other health care professionals. Most people will not need all of them.*

Head and neck oncologic surgeons provide expertise in surgical procedures of the head and neck (an otolaryngologist with specialized surgical training).

Maxillofacial prosthodontists create custom dentures or other prostheses to help restore facial appearance and speech and the ability to eat normally.

Medical oncologists treat cancer with drug therapy or other medications.

Nutritionists/dietitians help meet nutritional challenges that arise during and after treatment.

Oncologic dentists or **oral oncologists** provide expert dental or oral care for people with head and neck cancer.

Oncology nurses provide inpatient or outpatient care in a cancer treatment facility.

Otolaryngologists treat diseases of the ear, nose and throat; also called an ENT.

Palliative care specialists work to provide physical and emotional relief for cancer symptoms and treatment-related side effects.

Patient navigators/nurse navigators serve as a guide through diagnosis, treatment and follow-up; may also be patient advocates. They identify barriers to treatment, such as the need for transportation or help with copays and deductibles, and accesses resources to resolve such barriers. They are also commonly involved with coordination throughout the continuum of care.

Radiation oncologists treat cancer using radiation therapy.

Reconstructive/plastic surgeons use reconstructive procedures and techniques to help restore function and appearance after cancer treatment.

Rehabilitation specialists/physical therapists help restore movement and build physical strength after cancer treatment.

Speech-language pathologists offer strategies and techniques for regaining or improving the ability to speak, swallow or use other oral motor skills following treatment.

Whether he is working as a nurse in California, writing a book about his head and neck cancer experience or working to help the Arkansas Health Department track the spread of COVID-19, Rick Long puts his focus on helping others. After facing a Stage IV throat cancer diagnosis and successfully completing treatment, Rick is now cancer-free and finding creative ways to fulfill his passion for music.

SURVIVING CANCER

and making his dream of being a musician come true

Pursuing a career in music was always my dream so I moved from Arkansas to California to make it happen. When it did not bring in enough income to pay the bills, I channeled a desire to help people toward a new career in nursing. I spent 19 years assisting people as their nurse during the time when they were often at their worst.

When I noticed a knot about the size of an egg on the left side of my neck, I knew right away what it likely meant. I called my doctor's office the next day. The doctor thought my lymph nodes might be swollen due to an infection and prescribed a round of antibiotics. The knot didn't get smaller. My doctor then referred me to a head and neck specialist. When that physician saw me, he insisted on doing a biopsy of the knot that very day. Forty-eight hours later, I got the call that confirmed I had Stage IV squamous cell cancer of the head and neck.

Further testing showed the cancer was in my left tonsil and lymph nodes. Surgery was scheduled for a month later. The surgeon removed the tonsil along with a little more tissue around it until there were clean margins. After the surgery, I received chemotherapy and radiation therapy for six to seven weeks.

The radiation made my throat really sore. At one point, my doctor wanted to put in a feeding tube. I refused because I was afraid of losing the ability to swallow, even temporarily. It turns out this was a wise choice for me. I made sure to use a lidocaine rinse every four hours to help with the mouth and throat pain. To keep my throat flexible enough to swallow, I would sing "Ah" from a high pitch to a low pitch several times every day. Now I do this from low to high pitch to help strengthen my throat muscles and further improve my swallowing ability.

The chemotherapy caused nausea so I used my knowledge as a nurse to help. I started taking prescribed steroids and anti-nausea medications before the treatments in addition to afterward. When I took the medicines together a few days before a treatment, I discovered that I didn't get nauseated. That was my trick to getting through the rest of the treatments.

Getting cancer was a wake-up call for me. After taking off work for 11 months for treatment and recovery, I realized I was burned out from working as a nurse. I had been playing music since I was eight years old and it was my true passion. I looked for opportunities that would allow me to live my dream of being involved in music full-time.

I moved back to Arkansas and made my music dream come true. I played in several bands and was living the life until COVID-19 shut down the music and entertainment industries. As I watched the Arkansas Governor hold daily news conferences on television, I knew I had to help in some way. Fortunately, I had not let my nursing license expire.

I became a case investigator, assisting the health department track COVID-19. Now I work as a nurse researcher, still able to use my knowledge as a nurse, work from home and bring in a salary.

I think this pandemic has taught us all a lot. It's really important for people who have finished cancer treatment to try to stay healthy by being careful and mindful of contagions. Listen to your body and it will tell you what it needs. Change is coming whether you're ready for it or not. It's the natural flow of life.

My advice to others with cancer is to decide to live. If you decide to die, you'll die. Fear paralyzes people. Studies have shown that emotions only live about 90 seconds in the brain. They come and go just that quickly unless you feed them with negative thoughts. Then they will live forever. Attitude is everything.

Being a nurse gave me the benefit of some inside knowledge and I wanted to share it. I used the cancer experience as motivation to write a book, *The Nurse Who Had Cancer and Became a Rock Star*. It offers many practical tips and tricks designed to help people going through treatment for a head and neck cancer. It can also be beneficial for people with other cancers, too.

As restrictions from COVID-19 linger, I am focusing on setting up a home studio to record meditative healing music for people with cancer. I'm also collaborating with other musicians remotely and hoping to play a few shows when possible.

Although I do have some lingering side effects from the treatment, I am cancer-free and loving life. I can't eat spicy foods or drink soda or caffeine now, but I'm happy and I can help people — and you can, too. ■

Support is available to help you manage any side effects

Feeling nervous or concerned about potential side effects is normal. It may reassure you to know that there are many ways to prevent and manage the side effects related to treatment. Knowing what to expect can help you prepare, so you are encouraged to discuss all possible side effects of each treatment with your doctor. And, keep in mind that you likely will not experience all of the possible side effects because people respond differently, even if they have the same diagnosis and type of treatment.

From the beginning, you will have access to a multidisciplinary team that specializes in working with people who have head and neck cancer (see *The Health Care Team*, page 12). Your team will provide you with supportive care, also known as palliative care, which addresses the physical, emotional, practical, spiritual, financial and family-related challenges of people diagnosed with cancer. A main goal is to help you maintain a good quality of life throughout treatment and into survivorship.

These services are often covered by individual insurance plans, Medicare and Medicaid. To learn more, talk with the hospital's social worker, financial counselor or your health insurance representative.

Communicate with your health care team to prevent, minimize and manage side effects before they become serious.

POTENTIALLY SEVERE SIDE EFFECTS

Though serious side effects are rare, they can occur with certain treatments. Ask your doctor whether you are at risk from the therapies in your treatment plan, how to identify the symptoms and when to seek emergency care. Report symptoms immediately so they can be treated right away.

- **Infection** can occur as a result of a low white blood cell count (neutropenia) and other factors.
- **Immune-related adverse events** (irAEs) may occur with certain immunotherapy drugs if the immune system becomes overstimulated by treatment and causes inflammation in one or more organs or systems in the body. Some irAEs can develop rapidly, becoming severe and even life-threatening without immediate medical attention.
- **Cytokine release syndrome** can occur if immune cells affected by treatment rapidly release large amounts of cytokines into the bloodstream. Symptoms may include headache, fever, nausea, rash, low blood pressure, rapid heartbeat and difficulty breathing.
- **Infusion-related reactions** most frequently occur with treatment given intravenously (IV) through a vein in your arm, usually soon after exposure to the drug.
- **Tumor lysis syndrome** (TLS) may occur after the treatment of a fast-growing cancer, and with some types of drug therapy. TLS can potentially damage the kidneys, heart, liver or other organs.

COMMON PHYSICAL SIDE EFFECTS

Whether used alone or in combination, head and neck cancer treatments often cause physical side effects that can range from mild to severe (see Table 1).

LATE EFFECTS

Side effects that develop weeks, months or years after treatment ends are known as late effects. They can vary widely from person to person based on many factors, such as age, gender and overall health status. Some late effects disappear over time, while others may be permanent. Because they can be so hard to predict, knowing what to do if they occur is a good course of action. If possible, talk with your doctor before you start a treatment about the symptoms to be the most concerned about.

FINDING SUPPORT

Help is available in many forms to ensure your whole person is receiving care, including support for your dietary needs, emotional well-being, spiritual or religious guidance, social life and financial counseling. If you are having challenges in an area not listed here, talk with your health care team. You do not have to go through this alone. Ask your doctor for a referral. ■

TABLE 1
SOME COMMON PHYSICAL SIDE EFFECTS

Side Effects	Symptoms
Anemia	Low energy, weakness, dizziness, light-headedness, shortness of breath, rapid heartbeat
Bone loss and pain	Weakened bone caused by the cancer or treatment
Chemo brain	Brain fog, confusion and/or memory problems
Constipation	Difficulty passing stools or less frequent bowel movements compared to your usual bowel habits
Decreased appetite	Eating less than usual, feeling full after minimal eating, not feeling hungry
Diarrhea	Frequent loose or watery bowel movements that are commonly an inconvenience but can become serious if left untreated
Difficulty swallowing	Also called dysphagia; may include painful swallowing.
Fatigue	Tiredness that is much stronger and harder to relieve than the fatigue an otherwise healthy person has
Fever	Raised body temperature that could signal an infection
Hair loss (alopecia)	Hair loss on the head, face and body
Headache	Pain or discomfort in the head
Lymphedema	Swelling where lymph nodes have been removed or damaged
Nausea and vomiting	Stomach upset
Neuropathy	Numbness, pain, burning sensations and tingling, usually in the hands or feet at first
Neutropenia	Low white blood cell count that increases the risk of infection.
Pain	Musculoskeletal pain and aches that occur in the muscles, bones, tendons, ligaments or nerves.
Respiratory problems	Shortness of breath (dyspnea) with or without cough, upper respiratory infections
Skin reactions	Rash, redness and irritation or dry, flaky or peeling skin that may itch
Thrombocytopenia	Low number of platelets in the blood, which can lead to bruising and bleeding
Weight changes	Gaining or losing weight

Preparation helps you minimize specific oral complications

Treating head and neck cancers frequently involves surgery, radiation therapy and drug therapy, which may cause oral and dental complications. Treatment to this part of the body can affect breathing, speaking, eating, swallowing and other vital functions. Experiencing dental or oral side effects can further complicate how your body performs these vital needs. Consult with your doctor and your dentist before treatment begins to make a plan to prevent, minimize and manage these.

BEFORE TREATMENT

Some complications can be prevented by seeking dental care before treatment. The goal is to treat any existing problems so they do not become worse during treatment. Continue to practice good dental hygiene. It is recommended you find a dentist who specializes in treating people who have oral complications from cancer treatment.

DURING AND AFTER TREATMENT

Complications are likely to begin during treatment. To prevent them from becoming serious, check your mouth daily once treatment begins, as many problems can be seen or felt.

The most common side effects, in general, include oral mucositis (mouth sores), infection, dry mouth, taste changes, jaw or mouth stiffness, pain and swallowing difficulties. Specifically, some complications from chemotherapy include inflammation, oral mucositis and easy bleeding in the mouth. Complications from radiation therapy typically affect the area where the radiation beams were aimed and may include the breakdown of bone or tissue, growth of fibrous tissue or muscle, tooth decay and gum disease. Common issues from either radiation therapy or chemotherapy include inflamed mucous membranes in the mouth, infections, taste changes, dry mouth, pain, malnutrition and dehydration.

Descriptions of some oral and dental side effects follow.

Dry mouth, or xerostomia (zeer-oh-STOH-mee-uh), occurs when the salivary glands do not produce enough saliva because of damage from radiation therapy, chemotherapy or other medications. This is uncomfortable and increases your risk of both oral infections and tooth decay.

Infections are a greater risk for many reasons related to cancer treatments, including damage to mouth tissues, a lower white blood cell count (neutropenia) and a weakened immune system (see *Side Effects*, page 14). These therapies, as well as steroids and antibiotics, can also alter the balance of bacteria in your mouth, making you susceptible to a fungal infection commonly called thrush. Confirm the symptoms that require a call to the doctor.

Jaw and/or mouth stiffness can be caused by surgery, radiation therapy or even stress. Often painful, it can interfere with healing and lead to malnutrition. Prevention is very important because the condition is difficult to treat. Ask your health care team about jaw muscle exercises, such as opening your mouth as far as possible without pain, then closing it to repeat. Medication may be used to relax your jaw and mouth muscles if stiffness occurs.

Mouth pain and soreness can make eating, chewing and swallowing difficult, preventing you from getting adequate nutrition. Pain can also slow the healing process (see *Side Effects*, page 14). Controlling mouth pain is essential to the success of your treatment as well as your quality of life.

Oral mucositis (myoo-koh-SY-tis), or mouth sores, can occur when mucous membranes become inflamed. This is common with chemotherapy and is also possible with radiation therapy. Tiny sores begin in the mouth lining and become red, burn-like or ulcer-like sores. They can be extremely painful, making it difficult to eat, drink or swallow. Report symptoms immediately, as mouth sores are more easily and effectively resolved with early treatment.

Swallowing difficulties, called dysphagia (diz-FAY-jee-uh), and painful swallowing can make getting adequate nutrition a real challenge. Your health care team will examine you to determine the underlying cause, which could be related to treatment or to the cancer itself. You will likely be referred to a speech therapist to learn techniques that will help make swallowing easier. Drinking thickened fluids may also help. Call your doctor right away if you cough or choke while eating.

Taste changes are common for people receiving radiation therapy to the head or neck because cells in the salivary glands and/or taste buds can become damaged. Your sense of smell may also be affected. The condition generally goes away gradually, at least to some degree, within a few months after treatment ends.

Tooth decay and gum disease are likely to occur. It is important to find a dentist experienced in treating cancer survivors. Discuss how frequently you should schedule routine dental visits from now on — then stick to the schedule. ■

Strive for good mouth health during and after treatment

Following are some ideas to prevent, minimize or manage some side effects from head and neck cancer treatment.

1 / Practice good dental care. Brush your teeth, tongue and gums with a soft-bristled toothbrush using a fluoride toothpaste every four hours and at bedtime. Floss daily, unless bleeding occurs.

2 / Rinse your mouth several times a day and after eating with a mixture of 1 tablespoon of baking soda in 1 quart of warm water.

3 / Use alcohol-free mouthwash to avoid irritating your mouth lining.

4 / Take care of your lips, which can dry and crack, by using unscented lip balm. Avoid oil-based products.

5 / Wear dentures that fit properly, and leave them out whenever possible to expose your gums to air. Brush and rinse them every day.

6 / Avoid spicy, acidic, crunchy and sugary foods.

7 / Sip water often.

8 / Do not drink alcohol or use tobacco.

9 / Find a dentist with expertise in treating cancer survivors.

10 / Keep regular dental appointments.

Making a plan for your best nutrition puts you in control

Your head and neck cancer treatment may significantly affect how you eat and, in turn, how your body gets the key nutrients and fluids it requires to heal and help you maintain your daily activities. Better understanding the unique nutrition challenges ahead may help you manage the cancer, treatments and treatment-related side effects. Taking an active role in your nutrition can also make you feel more in control.

HOW TO GET STARTED

First, connect with a registered dietitian. This person will be a valuable resource for you throughout treatment and beyond. If your health care team does not have a dietitian on staff, ask for a referral.

Next, understand your treatment plan. It may include more than one type of treatment, so make sure you are aware of all potential side effects. For example, surgery can cause physical changes that affect your ability to eat. Some drug therapies and radiation therapy target cancer cells along with healthy cells, which often results in side effects, such as mouth sores, appetite loss and nausea, that can make it difficult for you to get the nutrients you need.

Lastly, it is valuable for you and your caregiver to meet with a speech pathologist. Along with helping you learn to speak again, this person also recommends how to comfortably and confidently resume eating in public.

Part of healing is returning to the things you love doing and re-engaging in activities with family and friends that you have long missed. Eating out is a very important one. Planning ahead with some of these strategies may make it easier:

- Browse restaurants online and choose one that offers selections you can eat comfortably.
- Look at the menu ahead of time, and preselect your entrée before you go.
- Call ahead to request a table that allows for more privacy.
- Ask that your water glass be kept full.
- Request half the meal to be served and the remainder placed in a carryout container. Have that portion precut into small pieces.
- Promote conversations that aren't related to cancer to make dining together a fun social outing for every one.

Now you're ready to work with your dietitian to develop a personalized nutrition strategy based on your needs and preferences. Your plan will also focus on preventing your treatment from being interrupted due to malnutrition, easing the side effects of treatment and improving your overall quality of life.

PRACTICAL SUGGESTIONS

During active treatment, your dietitian will be a resource for common concerns, such as poor appetite or not being able to drink enough. Your dietitian will also provide you with information on ways to modify your diet and give you specific information about your calories, protein and fluid needs.

Good nutrition is important during cancer treatment because the body needs extra energy to tolerate treatment. Your nutritional needs may increase during treatment, which may require a change in your diet. If you are unable to meet your nutrition goals, it can impact your overall health and may delay treatment. When nutrition needs are not met, the body uses protein and muscle to get energy, which can increase fatigue.

The following are suggestions to help you manage some of the common side effects that may affect your ability to get enough nutrition.

Taste Changes

- Use a non-alcohol based mouthwash.
- Use plastic utensils instead of metal ones.
- Add extra flavor to foods with spices.
- Use sugar-free lemon drops, gum or mints.

Appetite Loss

- Eat smaller portions more frequently.
- Carry snacks with you so you can eat when you are hungry.
- Add extra calories by using butter, oil, mayonnaise, sauces, dressing, gravy, honey, jam, cheese and nut butters.
- Add extra protein by eating poultry, meat, fish, eggs, yogurt, cheese and beans.
- Drink high-calorie and high-protein juices, shakes and smoothies.
- Exercise to help stimulate appetite.

Nausea

- Eat small snacks frequently.
- Keep ginger tea and ginger chews on hand. Ginger can help reduce nausea.
- Ask a member of your health care team about medications that may help relieve nausea.
- Stay hydrated.

Dehydration

- Keep a water bottle with you at all times.
- Use a straw to make drinking easier. ■

ENTERAL NUTRITION: Why tube feeding may be necessary

➥ **Head and neck cancer and its treatments may make it difficult** to get the nutrients you need from simply eating. Enteral (EN-teh-rul) nutrition, also referred to as tube feeding, is an alternative. At times, this temporary or permanent solution may be your single source of nutrients. Or, it may supplement the food you can eat by mouth. Though you may be concerned about having enteral nutrition, keep in mind that it can actually relieve the stress involved with giving your body what it needs to become stronger. You can focus your energy elsewhere.

A tube is placed directly into your abdomen and into the stomach or intestine. The formula that goes into the feeding tube is a liquid mixture to maintain strength and fuel the healing process. It is delivered through the tube directly into your gut. It can be given in several "meals" throughout the day (also called bolus feeding), or a specific amount can be delivered over a certain amount of time through the use of a special pump.

In the hospital, your health care team will manage this for you. If you need to continue (or begin) this type of feeding at home, you will be trained on the process. Medications can sometimes be given through the feeding tube. Ask your doctor or pharmacist if any of yours can. Contact your health care team immediately if you have any of these problems: leaking from the tube, discomfort at the tube site, digestive problems or continued weight loss despite taking in the appropriate amount of formula.

Even though you may not be using your mouth to eat as much or at all, brushing your teeth, flossing and caring for your gums should remain a priority.

Learn about the ways to help restore essential functionality

Treatment for head and neck cancer can affect your body's ability to perform some of its most vital functions, including breathing, speaking, chewing and swallowing. As you discuss treatment options with your doctor, you are encouraged to consult with a skilled surgeon who is experienced in head and neck reconstruction. Together, you can talk about the challenges to expect and how reconstructive surgery and rehabilitation may help you perform these basic functions and restore your appearance as much as possible.

Reconstruction may happen during your cancer surgery or later. Sometimes it involves replacing tissue, bone or skin, and your medical team will consider area(s) of your body to use as donor bone or tissue. After you and your medical team determine your treatment goals, ask questions to ensure you understand the procedure(s) and know what to expect. What does it entail? What is the recovery period? Is support available?

Certain organizations are dedicated to contributing financially to help head and neck cancer survivors live fully during and after treatment (see *Assistance & Support*, page 19).

Your surgical team may use one or more of the following procedures.

Dental rehabilitation. This may be recommended if your upper or lower jaw (maxilla or mandible) and teeth are removed. Prosthetic (artificial) teeth can improve appearance and help you eat more normally. This may include dentures or dental implants.

Flap surgery. When treatment involves surgically removing a significant amount of tissue or bone, a "flap" procedure may be used to replace missing tissue.

Local flap surgery closes the wound left from removing the cancer by rotating or moving nearby skin or tissue. In regional flap surgery, tissue with an attached blood supply is rotated or moved onto the site from a site nearby. This could include muscle and skin from your chest (pectoralis major flap) or skin from your shoulder (supraclavicular flap).

In free flap surgery, also called microvascular reconstruction, a specially trained surgeon removes a "flap" of tissue plus its feeding artery and vein from another part of the body. The surgeon uses this tissue to reconstruct areas in the head and neck, creating a new blood supply by sewing the flap's artery and vein into an artery and vein near the wound. Commonly used areas for free flaps include the forearm, the thigh, the lower leg, or the back/shoulder blade.

Gastrostomy tube (G-tube)**.** Some cancers and their treatments can affect the ability to swallow, which may make it difficult to get adequate nutrition. A gastrostomy tube inserted into your stomach through a small incision in your belly acts as a feeding tube, allowing you to receive liquid nutrition. Known as enteral (EN-teh-rul) nutrition, tube feeding may be your single source of nutrients, or it may be used to add them until you can eat enough by mouth. The tube may be removed when your ability to swallow improves (see *Enteral Nutrition: Why tube feeding may be necessary*, page 16).

Prosthetic rehabilitation. A prosthesis is an artificial replacement for part of your face or mouth (ear, eye, nose, hard palate or teeth) that is removed during surgery. A maxillofacial prosthodontist or anaplastologist will design a custom prosthesis specifically for you.

Tracheostomy. A surgeon creates a hole called a tracheostoma in the front of the neck and connects it to the trachea (windpipe). A hollow plastic tube is inserted to create a new airway to breathe through instead of the nose and mouth. This is temporary in most patients during treatment until swelling improves. A tracheostomy tube can easily be removed once there is no longer a need, and the hole will heal.

In surgeries such as a laryngectomy (removal of the voice box), the stoma is permanent and irreversible. A laryngectomy tube (lary tube) is a soft plastic tube placed at the time of surgery to help in the healing process. Once a patient is healed, no tube has to be worn in the stoma.

FEELING GOOD ABOUT YOUR APPEARANCE

Certain procedures affect parts of your body that are always on display – your face, mouth and neck – and you may feel self-conscious about your physical appearance. Speech difficulties can also be a source of insecurity. A healthy self-image can help you move forward with the rest of your life.

Ask your health care team for referrals to therapists and other specialists who are experienced in working with people with head and neck cancer. They can also refer you to support groups that offer peer support from survivors who have been in your shoes. ■

Living with a stoma

A temporary or permanent tracheostomy involves your surgeon making a hole in your neck and windpipe to allow you to breathe. This opening is called a tracheostoma or stoma. Adjusting to your stoma will take time, so do not stress about getting used to it immediately. Practical advice from your medical team or other cancer survivors who have stomas may help. Also consider the suggestions below.

- When you shower or bathe, use a shower shield, collar or stoma cover. Even the smallest amount of water entering your stoma can cause severe coughing.
- Properly clean your stoma daily. Because your breathing is altered, your body may produce more mucus to compensate, which can plug your stoma. Your health care team will provide detailed care instructions for your stoma and explain humidification and a heat and moisture exchange system (HME). Always follow those instructions.
- Disguise your stoma with mock turtlenecks, scarves and bandanas. Jewelry can also help conceal it.
- Cover your stoma with a tissue when you feel the urge to cough to catch any mucus your cough produces. At first, it will feel strange to cough through your stoma, but most people adjust fairly quickly.
- If you have dentures, it is important to wear them while you learn new ways of speaking. Properly fitted dentures will help your mouth compress air to produce speech that is more easily understood, so wear them except when sleeping.
- Wear a stoma cover, especially outside, to keep out microscopic substances in the air, such as pollen and dust, and reduce the risk of infection.
- Talk with your doctor if you are worried about being unable to breathe if your sheets or blankets cover your stoma while you are asleep.

Moving forward is easier with a plan

Once active treatment ends, you will enter a new phase known as survivorship. The term "survivor" means different things to different people. How you identify yourself regarding your head and neck cancer diagnosis is a personal choice. For the purposes of this article, survivor refers to anyone who has lived with, through or beyond cancer and is disease-free or living with cancer.

Recovering from cancer can take a great deal of patience and more time than you may expect. The physical, emotional and mental effects typically do not magically disappear when treatment ends. That realization can take the pressure off feeling like life should immediately return to how it was before your diagnosis. The following recommendations may help you feel more empowered as you move forward to this important new part of your life.

CREATE A SURVIVORSHIP PLAN

To help with this transition, many cancer advocacy organizations recommend a survivorship care plan. Ideally, your survivorship care plan starts at the time of your diagnosis and is given to you by your doctor. The plan should include the following:

- Medical history
- Health care team members with contact information
- Diagnosis, including the date, cancer type, subtype, tumor site(s), stage or classification
- Test results
- Molecular biomarkers
- Second or third opinions
- Treatment summary that includes type of surgery, days of radiation therapy, types of medicines (oral and IV), and your follow-up tests and appointments
- Recommended screening guidelines for other types of cancer and chronic health problems should be included

Before you resume care with your primary care physician, ask your oncologist to set up a long-term follow-up care plan that includes set appointments for regular monitoring.

This follow-up plan will help keep the lines of communication open with your doctor. It should include information about the following.

Risk factors. Being diagnosed with a head and neck cancer increases your risk for second cancers as well as a recurrence. The risk varies depending on the site of the primary cancer and the following:

- Alcohol and tobacco-related product usage, such as cigarettes, chewing tobacco and electronic cigarettes. You are encouraged to quit smoking and avoid alcohol. Resources for quitting smoking are available in this guide (see *Stopping Tobacco Use*, page 20).
- The presence of the human papillomavirus (HPV). HPV vaccines are now available to help prevent HPV-related cancer and other conditions (see *HPV and cancer*, page 7).
- Poor dental hygiene
- Prolonged exposure to the sun, which is linked to cancer of the lip

Side effects and late effects. Treatment-related side effects, such as fatigue, chronic pain and cognitive dysfunction (chemo brain), can last for weeks, months or even years. You may also experience emotional changes that can range from relief and gratitude to fear and anxiety. Many options are available to alleviate and manage these issues, so it is essential to stay in frequent contact with your health care team after treatment.

Your plan should also include information about your risk for developing late effects, which are side effects that can occur months or years after diagnosis. Ask your doctor about symptoms to watch for so you can begin to manage them before they become serious. Cancer centers are advised to provide educational seminars about these effects for patients and survivors. Ask your navigator about events designed specifically for head and neck cancer survivors.

Regular checkups. It is very important to schedule and keep all follow-up appointments and screenings recommended in your plan. These may include the following: examinations of the stoma (if you have one); dental exams; monitoring of your thyroid and pituitary gland function, especially if you had radiation therapy; and evaluation of maintenance or pain management medications or therapies, including type, dosage, frequency and duration.

Emotional well-being. Many forms of assistance are available. Help your doctor help you by being open and honest about how you are feeling and whether you are having challenges.

LEAD A HEALTHY LIFESTYLE

As you focus on your future, make smart lifestyle decisions. Eating right and exercising offer multiple health benefits. It may be helpful to consider both as treatments your body needs to continue to be well. For the most part, you are in control of the choices you make about nutrition and exercise, and smart choices will help you live the healthiest life possible.

You may have eating challenges from the cancer or its treatment. Working with a dietitian can help ensure you are able to get the nutrients your body needs.

PREPARE FOR ADDITIONAL TREATMENT

Depending on the location of the cancer and the type of treatment, you may need rehabilitation. It may include surgery, physical therapy, nutritional counseling, speech therapy or learning how to care for a stoma (see *Living with a stoma*, page 17).

You may need reconstructive and plastic surgery to rebuild bones or tissues (see *Reconstruction & Rehabilitation*, page 17). If reconstructive surgery is not possible because of tissue damage from the original surgery or from radiation therapy, a prosthodontist may be able to make a prosthesis (an artificial dental and/or facial part) to restore satisfactory swallowing, speech and appearance. If a prosthesis is necessary, you will receive special training on how to use it. ■

Get started on your own survivorship care plan

➥ If you do not receive a survivorship plan from your doctor, ask your nurse navigator or case manager to help you. Or, create your own. Download a sample Survivorship Care Plan at ***PatientResource.com/SurvivorshipPlan.aspx***, then request copies of all of your tests, biopsies, surgeries, pathology and consultation notes from your doctor's office.

Support and financial assistance available for you

BASIC LIVING EXPENSES

Bringing Hope Home ..... www.bringinghopehome.org, 484-580-8395
Cleaning for a Reason ..... www.cleaningforareason.org, 877-337-3348
Family Reach Foundation ..... www.familyreach.org, 973-394-1411
National Cancer Assistance Foundation ..... www.natcaf.org, 866-413-5789

CAREGIVERS & SUPPORT

4th Angel Patient & Caregiving Mentoring Program www.4thangel.org, 866-520-3197
Cactus Cancer Society ..... www.cactuscancer.org
CanCare ..... www.cancare.org, 888-461-0028
CANCER101 ..... www.cancer101.org, 646-638-2202
Cancer and Careers ..... www.cancerandcareers.org, 646-929-8032
Cancer*Care* ..... www.cancercare.org, 800-813-4673
Cancer Connection ..... www.cancer-connection.org, 413-586-1642
Cancer Hope Network ..... www.cancerhopenetwork.org, 877-467-3638
Cancer Really Sucks! ..... www.cancerreallysucks.org
Cancer Support Community ..... www.cancersupportcommunity.org
Cancer Support Community Helpline 888-793-9355
Cancer Survivors Network ..... csn.cancer.org, 800-227-2345
Caregiver Action Network ..... www.caregiveraction.org, 855-227-3640
CaringBridge ..... www.caringbridge.org
Center to Advance Palliative Care ..... www.capc.org
Chemo Angels ..... www.chemoangels.com
Cleaning for a Reason ..... www.cleaningforareason.org
Connect Thru Cancer ..... www.connectthrucancer.org
Cooking with Cancer ..... www.cookingwithcancer.org, 205-978-3570
Family Caregiver Alliance ..... www.caregiver.org, 800-445-8106
Friend for Life Cancer Support Network www.friend4life.org, 866-374-3634
The Gathering Place ..... www.touchedbycancer.org, 216-455-1517
Guide Posts of Strength, Inc. ..... www.cancergps.org, 336-883-4483
HPV Cancers Alliance ..... www.hpvalliance.org
Imerman Angels ..... www.imermanangels.org, 866-463-7626
LivingWell Cancer Resource Center ..... www.livingwellcrc.org, 630-933-7860
Lotsa Helping Hands ..... www.lotsahelpinghands.com
The Lydia Project ..... www.thelydiaproject.org, 877-593-4212
My LifeLine ..... www.mylifeline.org, 888-793-9355
National HPV Vaccination Roundtable ..... www.hpvroundtable.org
National LGBT Cancer Project ..... www.lgbtcancer.org, 212-673-4920
Patient Empowerment Network ..... www.powerfulpatients.org
SHARE Caregiver Circle ..... www.sharecancersupport.org/caregivers-support, 844-275-7427
Stronghold Ministry ..... www.mystronghold.org, 877-230-7674
Triage Cancer ..... www.triagecancer.org, 424-258-4628
Walk With Sally ..... www.walkwithsally.org, 310-322-3900
Well Spouse Association ..... www.wellspouse.org, 732-577-8899
weSPARK Cancer Support Center ..... www.wespark.org, 818-906-3022
Wigs & Wishes ..... www.wigsandwishes.org

CLINICAL TRIALS

Cancer Support Community ..... www.cancersupportcommunity.org/find-clinical-trial, 888-793-9355
Center for Information & Study on Clinical Research Participation ..... www.searchclinicaltrials.org, 877-633-4376
CenterWatch ..... www.centerwatch.com, 866-219-3440
ClinicalTrials.gov ..... www.clinicaltrials.gov
Head and Neck Cancer Alliance ..... www.headandneck.org/clinical-trial, 866-792-4622
Lazarex Cancer Foundation ..... www.lazarex.org, 877-866-9523, 925-820-4517
National Cancer Institute ..... www.cancer.gov/clinicaltrials

Assistance & Support Resources by Cancer Type

HEAD & NECK CANCER

Adenoid Cystic Carcinoma Organization International: www.accoi.org
Head and Neck Cancer Alliance: www.headandneck.org
HNC Living Foundation: www.hncliving.org
International Association of Laryngectomees: www.theial.com
Oral Cancer Awareness Foundation (OrCA): www.4orca.org
The Oral Cancer Foundation: www.oralcancerfoundation.org
Support for People with Oral and Head and Neck Cancer (SPOHNC): www.spohnc.org
Thyroid, Head & Neck Cancer Foundation (THANC): www.thancfoundation.org
United Ostomy Association of America: www.ostomy.org
Your Cancer Game Plan: www.yourcancergameplan.com

THYROID CANCER

American Thyroid Association: www.thyroid.org
Bite Me Cancer: www.bitemecancer.org
Light of Life Foundation: www.lightoflifefoundation.org
ThyCa: Thyroid Cancer Survivors' Association, Inc.: www.thyca.org
Thyroid Head & Neck Cancer Foundation: www.thancfoundation.org
United Ostomy Association of America: www.ostomy.org

ORAL CANCER

American Cancer Society: www.cancer.org
Oral Cavity and Oropharyngeal Cancer
American Society of Clinical Oncology: www.cancer.net
Oral and Oropharyngeal Cancer
National Cancer Institute: www.cancer.gov
Lip and Oral Cavity Cancer Treatment
Oral Cancer Awareness Foundation (OrCA): www.4orca.org
The Oral Cancer Foundation: www.oralcancerfoundation.org
Support for People with Oral and Head and Neck Cancer (SPOHNC): www.spohnc.org

LARYNGEAL CANCER

American Cancer Society: www.cancer.org
Laryngeal and Hypopharyngeal Cancer
American Society of Clinical Oncology: www.cancer.net
Laryngeal and Hypopharyngeal Cancer
American Speech-Language-Hearing Association: www.asha.org
Laryngeal Cancer
International Association of Laryngectomees: www.theial.com
National Cancer Institute: www.cancer.gov
Laryngeal Cancer Treatment

THROAT CANCER

American Cancer Society: www.cancer.org
Throat Cancer
Throat Cancer Foundation:
www.throatcancerfoundation.org

SINUS & NASAL CANCER

American Cancer Society: www.cancer.org
Nasal Cavity and Paranasal Sinuses Cancer
American Society of Clinical Oncology: www.cancer.net
Nasal Cavity and Paranasal Sinus Cancer
National Cancer Institute: www.cancer.gov
Paranasal Sinus and Nasal Cavity Cancer Treatment

SALIVARY GLAND CANCER

American Cancer Society: www.cancer.org
Salivary Gland Cancer
American Society of Clinical Oncology: www.cancer.net
Salivary Gland Cancer
National Cancer Institute: www.cancer.gov
Salivary Gland Cancer Treatment

NCI Cancer Information Service....800-422-6237
Thyca: Thyroid Cancer Survivor's Association, Inc.... www.thyca.org/about/clinical-trials, 646-685-3982

COMPLEMENTARY PROGRAMS & ALTERNATIVE MEDICINE

Believe Big.... www.believebig.org
The Center for Mind-Body Medicine.... www.cmbm.org
National Center for Complementary and Integrative Health.... www.nccih.nih.gov
Office of Cancer Complementary and Alternative Medicine.... cam.cancer.gov
Society for Oncology Massage.... www.s4om.org
Stewart's Caring Place.... www.stewartscaringplace.org
Touch, Caring and Cancer.... www.partnersinhealing.net, 541-632-3502

FERTILITY & CANCER

Alliance for Fertility Preservation.... www.allianceforfertilitypreservation.org
American Society for Reproductive Medicine.... www.reproductivefacts.org
Livestrong Foundation.... www.livestrong.org/what-we-do/program/fertility
RESOLVE: The National Infertility Association.... www.resolve.org
SaveMyFertility.... www.savemyfertility.org

IMMUNOTHERAPY

Cancer Research Institute.... www.cancerresearch.org/patients
Society for Immunotherapy of Cancer.... www.sitcancer.org

MEDICAL CARE EXPENSES

The Assistance Fund.... tafcares.org, 855-845-3663
Cancer*Care*.... www.cancercare.org, 800-813-4673
Cancer Survivors' Fund (young adults, children).... www.cancersurvivorsfund.org, 281-437-7142
Cancer Warrior, Inc.... www.cancerwarriorinc.org, 702-546-8575
Hair to Stay.... www.hairtostay.org, 800-270-1897
HNC Living Foundation.... www.hncliving.org
Patient Access Network Foundation.... www.panfoundation.org, 866-316-7263
Patient Advocate Foundation.... www.patientadvocate.org, 800-532-5274

NUTRITION

American Cancer Society.... www.cancer.org, 800-227-2345
Cancer*Care*.... www.cancercare.org, 800-813-4673
Cancer Support Community.... www.cancersupportcommunity.org, 888-793-9355
HNC Living Foundation.... www.hncliving.org
OncoLink.... www.oncolink.org
Physicians Committee for Responsible Medicine.... www.pcrm.org/health-topics/cancer
Thyroid Head & Neck Cancer Foundation (THANC).... www.thancfoundation.org/for-patients/eating-healthy-treating-cancer, 646-685-3982

PAIN MANAGEMENT

American Chronic Pain Association.... www.theacpa.org
American Society of Anesthesiologists.... www.asahq.org
Cancer Pain Research Consortium.... www.cancerpainresearch.com
U.S. Pain Foundation.... www.uspainfoundation.org

PRESCRIPTION EXPENSES

America's Pharmacy.... www.americaspharmacy.com, 888-495-3181
Cancer*Care* Co-Payment Assistance Foundation.... www.cancercarecopay.org, 866-552-6729
Cancer Financial Assistance Coalition.... www.cancerfac.org
Good Days.... www.mygooddays.org, 972-608-7141
HealthWell Foundation.... www.healthwellfoundation.org, 800-675-8416
HNC Living Foundation.... www.hncliving.org
Medicine Assistance Tool.... www.medicineassistancetool.org
National Organization for Rare Disorders.... www.rarediseases.org, 203-744-0100
NeedyMeds.... www.needymeds.org, 800-503-6897
Patient Access Network Foundation.... www.panfoundation.org, 866-316-7263
Patient Advocate Foundation Co-Pay Relief.... www.copays.org, 866-512-3861
RxAssist.... www.rxassist.org
RxHope.... www.rxhope.org
Singlecare.... www.singlecare.com, 844-234-3057
Stupid Cancer.... www.stupidcancer.org, 212-619-1040
Together Rx Access.... www.togetherrxaccess.com, 800-444-4106

RADIATION ONCOLOGY

American Society for Radiation Oncology.... www.astro.org
National Association for Proton Therapy.... www.proton-therapy.org
RadiologyInfo.org.... www.radiologyinfo.org
RT Answers.... www.rtanswers.org
Society of Interventional Radiology.... www.sirweb.org

REIMBURSEMENT & PATIENT ASSISTANCE PROGRAMS

Amgen First Step.... amgenfirststep.com/products, 888-657-8371
Bristol-Myers Squibb.... bms.com/patient-and-caregivers/get-help-paying-for-your-medicines.html, 800-721-8909
Capresla Access Support.... www.caprelsa.com/pt_resources_financial_assistance.asp
Cometriq EASE.... www.cometriq.com/support, 844-900-3273
Erbitux Support.... lillyoncologysupport.com/erbitux-financial-support, 866-472-8663
Exelixis Access Services (EASE).... www.cabometyx.com/financial-support, 844-901-3273
Genentech BioOncology Co-pay Assistance Program.... copayassistancenow.com, 855-692-6729
Granix Patient Assistance.... www.granixrx.com/resources, 888-587-3263
Keytruda KEY+YOU.... www.keyplusyou.com
Lenvima Reimbursement Resources.... eisaireimbursement.com/patient/lenvima, 866-613-4724
Merck Access Program.... merckaccessprogram.com
Merck Helps.... merckhelps.com, 800-727-5400
Neulasta Patient Assistance.... www.amgenassist360.com/patient/neulasta-cost-assistance, 888-427-7478
Neupogen Assist 360.... www.amgenassist360.com/patient/neupogen-cost-assistance, 888-427-7478
Nexavar REACH Patient Program.... www.nexavar-us.com/reach-financial-support, 866-581-4992
Novartis Patient Assistance Foundation.... www.novartis.us/ourproducts/patient-assistance/patient-assistance-foundation-enrollment, 800-277-2254
Novartis Patient Assistance Now Oncology (PANO).... www.patient.novartisoncology.com/financial-assistance/pano/, 800-277-2254
Opdivo with You.... www.patientsupport.bmscustomerconnect.com/opdivo-with-you-registration
Retevmo Savings & Support.... www.retevmo.com/savings-support, 866-472-8663
Rozlytrek Access Solutions.... www.genentech-access.com/patient/brands/rozlytrek.html, 877-463-3683
Rozlytrek Financial Assistance.... www.rozlytrek.com/ntrk/support-and-resources/financial-assistance.html, 888-249-4918
Sanofi Patient Assistance Connection.... sanofipatientconnection.com, 888-847-4877
Tafinlar + Mekinist Financial Resources.... www.copay.novartisoncology.com/?name=tafmek, 877-577-7756
Vitrakvi TRAK Assist.... www.vitrakvi-us.com/patient-assistance-program, 844-634-8725
Zarxio Sandoz One Source.... www.zarxio.com/patient/support, 844-726-3691

STOPPING TOBACCO USE

American Cancer Society.... www.cancer.org
BecomeAnEx.... www.becomeanex.org
National Cancer Institute Smoking Quitline.... 877-448-7848
QuitSTART.... teen.smokefree.gov
Smokefree.gov.... smokefree.gov
SmokefreeTXT.... smokefree.gov/smokefreetxt

TRANSPORTATION & TRAVEL RESOURCES

The Air Care Alliance.... www.aircarealliance.org, 215-395-1645
Air Charity Network.... www.aircharitynetwork.org, 877-621-7177
American Cancer Society (Hope Lodge).... www.cancer.org/hopelodge, 800-227-2345
American Cancer Society (Road to Recovery).... www.cancer.org/roadtorecovery, 800-227-2345
Angel Flight Central.... www.angelflightcentral.org, 866-569-9464
Cancer*Care*.... www.cancercare.org, 800-813-4673
Chai Lifeline.... www.chailifeline.org, 877-242-4543
Compass to Care.... www.compasstocare.org, 773-657-3269
Corporate Angel Network.... www.corpangelnetwork.org, 914-328-1313
Endure to Cure.... www.enduretocure.org
Family Reach Foundation.... www.familyreach.org, 973-394-1411
Fisher House Foundation.... www.fisherhouse.org, 888-294-8560
Healthcare Hospitality Network, Inc.... www.hhnetwork.org, 800-542-9730
HNC Living Foundation.... www.hncliving.org
Hospitality Homes.... www.hosp.org, 888-595-4678
Joe's House.... www.joeshouse.org
Lifeline Pilots.... www.lifelinepilots.org, 800-822-7972
Mercy Medical Angels.... www.mercymedical.org, 757-318-9174
Miracle Flights For Kids.... www.miracleflights.org, 800-359-1711
National Cancer Assistance Foundation.... www.natcaf.org, 866-413-5789
Operation Liftoff.... www.operationliftoff.com
Patient Access Network Foundation.... www.panfoundation.org, 800-394-0161
Patient AirLift Services.... www.palservices.org, 888-818-1231
Veterans Airlift Command.... www.veteransairlift.org, 952-582-2911

➥ *For more resources, go to* PatientResource.com

STAGES OF LARYNGEAL CANCER

CLASSIFYING LARYNGEAL CANCER

Classification	Definition
TUMOR (T)	
TX	Primary tumor cannot be assessed.
Tis	Carcinoma in situ.
Supraglottis	
T1	Tumor limited to one subsite of supraglottis with normal vocal cord mobility.
T2	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.
T3	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.
T4	Moderately advanced or very advanced.
T4a	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).
T4b	Very advanced local disease. Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures.
Glottis	
T1	Tumor limited to the vocal cord(s) (may involve anterior or posterior commissure) with normal mobility.
T1a	Tumor limited to one vocal cord.
T1b	Tumor involves both vocal cords.
T2	Tumor extends to supraglottis and/or subglottis, and/or with impaired vocal cord mobility.
T3	Tumor limited to the larynx with vocal cord fixation and/or invasion of paraglottic space and/or inner cortex of the thyroid cartilage.
T4	Moderately advanced or very advanced.
T4a	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).
T4b	Very advanced local disease. Tumor invades prevertebral space, encases carotid artery or invades mediastinal structures.
Subglottis	
T1	Tumor limited to the subglottis.
T2	Tumor extends to vocal cord(s) with normal or impaired mobility.
T3	Tumor limited to larynx with vocal cord fixation and/or invasion of paraglottic space and/or inner cortex of the thyroid cartilage.
T4	Moderately advanced or very advanced.
T4a	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).
T4b	Very advanced local disease. Tumor invades prevertebral space, encases carotid artery or invades mediastinal structures.
NODE (N)	
NX	Regional lymph nodes cannot be assessed.
N0	No regional lymph node metastasis.
N1	Metastasis in a single ipsilateral (on the same side) lymph node 3 cm or smaller in greatest dimension and ENE*(-).
N2	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(-).
N2a	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(-).
N2b	Metastasis in multiple ipsilateral (on the same side) nodes none larger than 6 cm in greatest dimension and ENE*(-).
N2c	Metastases in bilateral (on both sides) or contralateral (on the opposite side) lymph nodes, none larger than 6 cm in greatest dimension and ENE*(-).
N3	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 of any size and ENE(+).
N3a	Metastasis in a lymph node, larger than 6 cm in greatest dimension and ENE*(-).
N3b	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 of any size and ENE(+).
METASTASIS (M)	
M0	No distant metastasis.
M1	Distant metastasis.

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

STAGES OF ORAL CANCER

CLASSIFYING ORAL CANCER

Classification	Definition
TUMOR (T)	
TX	Primary tumor cannot be assessed.
Tis	Carcinoma in situ.
T1	Tumor not more than 2 cm, with depth of invasion (DOI) not more than 5 mm. DOI is depth of invasion and not tumor thickness.
T2	Tumor not more than 2 cm, with DOI more than 5 mm *or* tumor more than 2 cm and not more than 4 cm, with DOI not more than 10 mm. DOI is depth of invasion and not tumor thickness.
T3	Tumor more than 2 cm and not more than 4 cm with DOI more than 10 mm; *or* tumor more than 4 cm with DOI not more than 10 mm. DOI is depth of invasion and not tumor thickness.
T4	Moderately advanced or very advanced local disease.
T4a	Moderately advanced local disease. Tumor more than 4 cm with DOI more than 10 mm *or* 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). DOI is depth of invasion and not tumor thickness.
T4b	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.
NODE (N)	
NX	Regional lymph nodes cannot be assessed.
N0	No regional lymph node metastasis.
N1	Metastasis in a single ipsilateral (on the same side) lymph node 3 cm or smaller in greatest dimension and ENE*(-).
N2	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(-).
N2a	Metastases 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(-).
N2b	Metastases in multiple ipsilateral (on the same side) nodes, none larger than 6 cm in greatest dimension and ENE*(-).
N2c	Metastases in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension and ENE*(-).
N3	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 of any size and ENE(+).
N3a	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-).
N3b	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 of any size and ENE(+).
METASTASIS (M)	
M0	No distant metastasis.
M1	Distant metastasis.

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

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

STAGING ORAL 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

STAGES OF SALIVARY GLAND CANCER

CLASSIFYING SALIVARY GLAND CANCER

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

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

STAGING SALIVARY GLAND CANCER

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

STAGES OF SINUS AND NASAL CANCER

CLASSIFYING SINUS AND NASAL CANCER

Classification	Definition
TUMOR (T)	
TX	Primary tumor cannot be assessed.
Tis	Carcinoma in situ.
Maxillary Sinus	
T1	Tumor limited to maxillary sinus mucosa with no erosion or destruction of bone.
T2	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.
T3	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.
T4	Moderately advanced or very advanced local disease.
T4a	Moderately advanced local disease. Tumor invades anterior orbital contents (eye socket), skin of cheek, pterygoid plates, infratemporal fossa, cribriform plate, sphenoid or frontal sinuses.
T4b	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).
Nasal Cavity and Ethmoid Sinus	
T1	Tumor restricted to any one subsite, with or without bony invasion.
T2	Tumor invading two subsites in a single region or extending to involve an adjacent region within the nasoethmoidal complex, with or without bony invasion.
T3	Tumor extends to invade the medial wall or floor of the orbit (eye socket), maxillary sinus, palate, or cribriform plate.
T4	Moderately advanced or very advanced local disease.
T4a	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.
T4b	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).
NODE (N)	
NX	Regional lymph nodes cannot be assessed.
N0	No regional lymph node metastasis.
N1	Metastasis in a single ipsilateral (on the same side) lymph node 3 cm or smaller in greatest dimension and ENE*(-).
N2	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(-).
N2a	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(-).
N2b	Metastases in multiple ipsilateral (on the same side) nodes none larger than 6 cm in greatest dimension and ENE*(-).
N2c	Metastases in bilateral (on both sides) or contralateral (on the opposite side) lymph node(s), none larger than 6 cm in greatest dimension and ENE*(-).
N3	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 of any size and ENE(+).
N3a	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-).
N3b	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 of any size and ENE(+).
METASTASIS (M)	
M0	No distant metastasis.
M1	Distant metastasis.

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

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

STAGES OF THROAT CANCER

(HPV-) CLASSIFYING OROPHARYNGEAL AND HYPOPHARYNGEAL CANCERS

Classification	Definition
TUMOR (T)	
TX	Primary tumor cannot be assessed.
Tis	Carcinoma in situ.
Oropharyngeal (HPV-)	
T1	Tumor 2 cm or smaller in greatest dimension.
T2	Tumor larger than 2 cm but not larger than 4 cm in greatest dimension.
T3	Tumor larger than 4 cm in greatest dimension or extension to lingual surface of epiglottis.
T4	Moderately advanced or very advanced local disease.
T4a	Moderately advanced local disease. Tumor invades the larynx, extrinsic muscle of tongue, medial pterygoid, hard palate or mandible (jawbone).
T4b	Very advanced local disease. Tumor invades lateral pterygoid muscle, pterygoid plates, lateral nasopharynx, or skull base or encases carotid artery.
Hypopharyngeal	
T1	Tumor limited to one subsite of hypopharynx and/or 2 cm or smaller in greatest dimension.
T2	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.
T3	Tumor larger than 4 cm in greatest dimension or with fixation of hemilarynx or extension to esophageal mucosa.
T4	Moderately advanced and very advanced local disease.
T4a	Moderately advanced local disease. Tumor invades thyroid/cricoid cartilage, hyoid bone, thyroid gland, esophageal muscle or central compartment soft tissue.
T4b	Very advanced local disease. Tumor invades prevertebral fascia, encases carotid artery or involves mediastinal structures.
NODE (N)	
NX	Regional lymph nodes cannot be assessed.
N0	No regional lymph node metastasis.
N1	Metastasis in a single ipsilateral (on the same side) lymph node 3 cm or smaller in greatest dimension and ENE*(-).
N2	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(-).
N2a	Metastasis in a 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(-).
N2b	Metastases in multiple ipsilateral (on the same side) nodes none larger than 6 cm in greatest dimension and ENE*(-).
N2c	Metastases in bilateral (on both sides) or contralateral (on the opposite side) lymph nodes, none larger than 6 cm in greatest dimension and ENE*(-).
N3	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 of any size and ENE(+).
N3a	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE*(-).
N3b	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 of any size and ENE(+).
METASTASIS (M)	
M0	No distant metastasis.
M1	Distant metastasis.

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

(HPV-) STAGING OROPHARYNGEAL AND HYPOPHARYNGEAL CANCERS

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

(HPV+) CLASSIFYING OROPHARYNGEAL CANCER

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

(HPV+) STAGING OROPHARYNGEAL CANCER

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

CLASSIFYING NASOPHARYNGEAL CANCER

Classification	Definition
TUMOR (T)	
TX	Primary tumor cannot be assessed.
T0	No tumor identified, but EBV-positive cervical node(s) involvement.
Tis	Carcinoma in situ.
T1	Tumor confined to nasopharynx (behind nasal cavity/upper part of throat), or extension to oropharynx and/or nasal cavity without parapharyngeal involvement.
T2	Tumor with extension to parapharyngeal space, and/or adjacent soft tissue involvement (medial pterygoid, lateral pterygoid, prevertebral muscles).
T3	Tumor with infiltration of bony structures at skull base, cervical vertebra, pterygoid structures, and/or paranasal sinuses.
T4	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.
NODE (N)	
NX	Regional lymph nodes cannot be assessed.
N0	No regional lymph node metastasis.
N1	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.
N2	Bilateral metastasis in cervical lymph node(s), 6 cm or smaller in greatest dimension, above the caudal border of cricoid cartilage.
N3	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.
METASTASIS (M)	
M0	No distant metastasis.
M1	Distant metastasis.

STAGING NASOPHARYNGEAL CANCER

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

STAGES OF THYROID CANCER

CLASSIFYING THYROID CANCER

Classification	Definition
TUMOR (T)	
TX	Primary tumor cannot be assessed.
T0	No evidence of primary tumor.
Anaplastic & Differentiated	
T1	Tumor ≤ (not more than) 2 cm in greatest dimension limited to the thyroid.
T1a	Tumor ≤ (not more than) 1 cm in greatest dimension limited to the thyroid.
T1b	Tumor > (more than) 1 cm but ≤ (not more than) 2 cm in greatest dimension limited to the thyroid.
T2	Tumor > (more than) than 2 cm but ≤ (not more than) 4 cm in greatest dimension limited to the thyroid.
T3	Tumor > (more than) 4 cm limited to the thyroid, or gross extrathyroidal extension (extended beyond the thyroid) invading only strap muscles.
T3a	Tumor > (more than) 4 cm limited to the thyroid.
T3b	Gross extrathyroidal extension (extended beyond the thyroid) invading only strap muscles (sternohyoid, sternothyroid, thyrohyoid or omohyoid muscles) from a tumor of any size.
T4	Includes gross extrathyroidal extension (extended beyond the thyroid) beyond the strap muscles.
T4a	Gross extrathyroidal extension (extended beyond the thyroid) invading subcutaneous soft tissues, larynx, trachea, esophagus, or recurrent laryngeal nerve from a tumor of any size.
T4b	Gross extrathyroidal extension (extended beyond the thyroid) invading prevertebral fascia or encasing the carotid artery or mediastinal vessels from a tumor of any size.
Medullary	
T1	Tumor is ≤ (not more than) 2 cm in greatest dimension limited to the thyroid.
T1a	Tumor is ≤ (not more than) 1 cm in greatest dimension limited to the thyroid.
T1b	Tumor is > (more than) 1 cm but ≤ (not more than) 2 cm in greatest dimension limited to the thyroid.
T2	Tumor is > (more than) 2 cm but ≤ (not more than) 4 cm in greatest dimension limited to the thyroid.
T3	Tumor is > (more than) 4 cm or with extrathyroidal extension (extended beyond the thyroid).
T3a	Tumor is > (more than) 4 cm in greatest dimension limited to the thyroid.
T3b	Tumor of any size with gross extrathyroidal extension (extended beyond the thyroid) invading only strap muscles (sternohyoid, sternothyroid, thyrohyoid or omohyoid muscles).
T4	Advanced disease.
T4a	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.
T4b	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.
NODE (N)	
NX	Regional lymph nodes cannot be assessed.
N0	No evidence of locoregional lymph node metastasis.
N0a	One or more cytologically (based on fine needle aspiration biopsy) or histologically (based on pathologic analysis of tissues after surgery) confirmed benign lymph nodes.
N0b	No radiologic or clinical evidence of locoregional lymph node metastasis.
N1	Metastasis to regional nodes.
N1a	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.
N1b	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.
METASTASIS (M)	
M0	No distant metastasis.
M1	Distant metastasis.

STAGING MEDULLARY THYROID CANCER

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

STAGING ANAPLASTIC THYROID CANCER

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

STAGING DIFFERENTIATED THYROID CANCER*

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

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

MY TREATMENTS

Documenting your cancer diagnosis and treatments will help you be an active participant in your care.

Surgery_____

Chemotherapy_____

Immunotherapy_____

Targeted Therapy_____

Radiation Therapy_____

Clinical Trials_____

Supportive Care_____

MY CANCER DIAGNOSIS

Cancer Type/Subtype_____

Stage/Grade_____

Diagnosis Date (year)_____

Biomarkers (if any)_____

HEALING FROM CANCER IS HARD. APPLYING FOR HELP IS NOT.

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- Patient-centered specialized therapies that aid in recovery
- Transportation to and from appointments
- Medical supplies needed for recovery
- Dental services
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- Medication

WHERE TO APPLY

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- SUSAN

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