About Oral Cavity and Oropharyngeal Cancer

Overview and Types

If you have been diagnosed with oral cavity or oropharyngeal cancer or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- [What Are Oral Cavity and Oropharyngeal Cancers?](#)

Research and Statistics

See the latest estimates for new cases of oral cavity and oropharyngeal cancers in the US and what research is currently being done.

- [Key Statistics for Oral Cavity and Oropharyngeal Cancers](#)
- [What’s New in Oral Cavity and Oropharyngeal Cancer Research and Treatment?](#)

What Are Oral Cavity and Oropharyngeal Cancers?

Cancer starts when cells in the body begin to grow out of control. Cells in nearly any part of the body can become cancer, and can spread to other areas of the body. To learn more about how cancers start and spread, see [What Is Cancer?](#)

Oral cavity cancer, or just oral cancer, is cancer that starts in the mouth (also called the *oral cavity*). Oropharyngeal cancer starts in the oropharynx, which is the part of the throat just behind the mouth. To understand these cancers, it helps to know the parts of the mouth and throat.
The oral cavity (mouth) and oropharynx (throat)

The oral cavity includes the lips, the inside lining of the lips and cheeks (*buccal mucosa*), the teeth, the gums, the front two-thirds of the tongue, the floor of the mouth below the tongue, and the bony roof of the mouth (hard palate). The area behind the wisdom teeth (called the *retromolar trigone*) can be included as a part of the oral cavity, although it is often considered part of the oropharynx.

The oropharynx is the part of the throat just behind the mouth. It begins where the oral cavity stops. It includes the base of the tongue (the back third of the tongue), the soft palate (the back part of the roof of the mouth), the tonsils, and the side and back wall of the throat.
The oral cavity and oropharynx help you breathe, talk, eat, chew, and swallow. Minor salivary glands throughout the oral cavity and oropharynx make saliva that keeps your mouth moist and helps you digest food.

The different parts of the oral cavity and oropharynx are made up of several types of cells. Different cancers can develop from each type of cell. The differences are important, because they can influence a person’s treatment options and prognosis (outlook).
Cancers can also start in other parts of the throat, but these cancers aren’t discussed in this document:

- Cancers of the nasopharynx (the part of the throat behind the nose and above the oropharynx) are discussed in the American Cancer Society document Nasopharyngeal Cancer.
- Cancers that start in the larynx (voice box) or the hypopharynx (the part of the throat below the oropharynx) are discussed in the American Cancer Society document Laryngeal & Hypopharyngeal Cancer.

**Tumors and growths in the oral cavity and oropharynx**

Many types of tumors (abnormal growths of cells) can develop in the oral cavity and oropharynx. They fit into 3 general categories:

- Benign or non-cancerous growths that do not invade other tissues and do not spread to other parts of the body.
- Harmless growths that can later develop into cancer. These are known as pre-cancerous conditions.
- Cancerous tumors that can grow into surrounding tissues and spread to other parts of the body.

**Benign (non-cancerous) tumors**

Many types of benign tumors and tumor-like conditions can start in the mouth or throat:

- Eosinophilic granuloma
- Fibroma
- Granular cell tumor
- Keratoacanthoma
- Leiomyoma
- Osteochondroma
- Lipoma
- Schwannoma
- Neurofibroma
- Papilloma
- Condyloma acuminatum
Verruciform xanthoma
Pyogenic granuloma
Rhabdomyoma
Odontogenic tumors (tumors that start in tooth-forming tissues)

These non-cancerous tumors start from different kinds of cells and have a variety of causes. Some of them may cause problems, but they are not likely to be life-threatening. The usual treatment for these types of tumors is surgery to remove them completely since they are unlikely to recur (come back).

Leukoplakia and erythroplakia (possible pre-cancerous conditions)

Leukoplakia and erythroplakia are terms used to describe certain types of abnormal tissue that can be seen in the mouth or throat:

- Leukoplakia is a white or gray patch.
- Erythroplakia is a flat or slightly raised, red area that often bleeds easily if it is scraped.
- Erythroleukoplakia is a patch with both red and white areas.

Your dentist or dental hygienist may be the first person to spot these white or red areas. They may be a cancer, they may be a pre-cancerous condition called dysplasia, or they could be a relatively harmless condition.

Dysplasia is graded as mild, moderate, or severe, based on how abnormal the tissue looks under the microscope. Knowing the degree of dysplasia helps predict how likely it is to progress to cancer or to go away on its own or after treatment. For example, severe dysplasia is more likely to become a cancer, while mild dysplasia is more likely to go away completely.

The most frequent causes of leukoplakia and erythroplakia are smoking and chewing tobacco. Poorly fitting dentures that rub against the tongue or the inside of the cheeks can also cause these conditions. But sometimes, there may be no obvious cause. Dysplasia will often go away if the cause is removed.

A biopsy is the only way to know for certain if an area of leukoplakia or erythroplakia contains dysplastic (pre-cancerous) cells or cancer cells. For a biopsy, a sample of tissue from the abnormal area is removed and then looked at under the microscope. But other tests may be used first to help determine if they might be cancers (and therefore will need a biopsy) or to choose the best area to sample for a biopsy. These tests are
described in the section Can Oral Cavity and Oropharyngeal Cancers Be Found Early?

Most cases of leukoplakia do not develop into cancer. But some leukoplakias are either cancerous when first found or have pre-cancerous changes that can eventually progress to cancer if not properly treated.

Erythroplakia and erythroleukoplakia are less common but are usually more serious. Most of these red lesions turn out to be cancer when they are biopsied or will develop into cancer later.

However, it is important to note that most oral cancers do not develop from pre-existing lesions (either leukoplakia or erythroplakia).

**Oral cavity and oropharyngeal cancers**

Several types of cancers can start in the mouth or throat.

**Squamous cell carcinomas**

More than 90% of cancers of the oral cavity and oropharynx are squamous cell carcinomas, also called squamous cell cancers. These cancers begin in early forms of squamous cells, which are flat, scale-like cells that normally form the lining of the mouth and throat.

The earliest form of squamous cell cancer is called carcinoma in situ, meaning that the cancer cells are present only in the outer layer of cells called the epithelium. This is different from invasive squamous cell carcinoma, where the cancer cells have grown into deeper layers of the oral cavity or oropharynx.

**Verrucous carcinoma**

Verrucous carcinoma is a type of squamous cell carcinoma that makes up less than 5% of all oral cancers. It is a low-grade (slow growing) cancer that rarely spreads to other parts of the body, but it can grow deeply into surrounding tissue.

If they are not treated, areas of ordinary squamous cell cancer may develop within some verrucous carcinomas. Some verrucous carcinomas may already have areas of ordinary squamous cell cancer that are not recognized in the biopsy sample. Cells from these areas of squamous cell carcinoma may then spread to other parts of the body.
For all of these reasons, verrucous carcinomas should be removed promptly, along with a wide margin of surrounding normal tissue.

**Minor salivary gland carcinomas**

Minor salivary gland cancers can develop in the glands in the lining of the mouth and throat. There are several types of minor salivary gland cancers, including adenoid cystic carcinoma, mucoepidermoid carcinoma, and polymorphous low-grade adenocarcinoma. For more information about these cancers and benign salivary gland tumors, see the American Cancer Society document [Salivary Gland Cancer](https://www.cancer.org/cancer/salivary-gland-cancer.html).

**Lymphomas**

The tonsils and base of the tongue contain immune system (lymphoid) tissue, where cancers called **lymphomas** can start. For more information about these cancers, see the American Cancer Society documents [Non-Hodgkin Lymphoma](https://www.cancer.org/cancer/non-hodgkin-lymphoma/index), [Non-Hodgkin Lymphoma in Children](https://www.cancer.org/cancer/childhood-cancers/lymphoma-in-children/index), and [Hodgkin Disease](https://www.cancer.org/cancer/hodgkin-disease/index).

The information in the rest of this document about oral cavity and oropharyngeal cancer covers only squamous cell carcinoma.

- **References**
  
  See all references for Oral Cavity and Oropharyngeal Cancers

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**Key Statistics for Oral Cavity and Oropharyngeal Cancers**

The American Cancer Society’s most recent estimates for oral cavity and oropharyngeal cancers in the United States are for 2018:

- About 51,540 people will get oral cavity or oropharyngeal cancer.
An estimated 10,030 people will die of these cancers. These cancers are more than twice as common in men as in women. They are about equally common in blacks and in whites.

In recent years, the overall rate of new cases of this disease has been stable in men and dropping slightly in women. However, there has been a recent rise in cases of oropharyngeal cancer linked to infection with human papillomavirus (HPV) in white men and women.

The death rate for these cancers has been decreasing over the last 30 years.

Oral cavity and oropharyngeal cancers occur most often in the following sites:

- The tongue
- The tonsils and oropharynx
- The gums, floor of the mouth, and other parts of the mouth

The rest are found in the lips, the minor salivary glands (which often occur in the roof of the mouth), and other sites.

The average age of most people diagnosed with these cancers is 62, but they can occur in young people. They are rare in children, but a little more than one-quarter occur in patients younger than 55.

The rates of these cancers vary among countries. For example, they are much more common in Hungary and France than in the United States and much less common in Mexico and Japan.

When patients newly diagnosed with oral and oropharyngeal cancers are carefully examined, a small portion will have another cancer in a nearby area such as the larynx (voice box), the esophagus (the tube that carries food from the throat to the stomach), or the lung. Some who are cured of oral or oropharyngeal cancer will develop another cancer later in the lung, mouth, throat, or other nearby areas. For this reason, people with oral and oropharyngeal cancer will need to have follow-up exams for the rest of their lives. They also need to avoid using tobacco and alcohol, which increase the risk for these second cancers.

For statistics related to survival, see the section Survival Rates for Oral Cavity and Oropharyngeal Cancer by Stage.

Visit the American Cancer Society’s Cancer Statistics Center for more key statistics.
What’s New in Oral Cavity and Oropharyngeal Cancer Research and Treatment?

Important research into oral and oropharyngeal cancers is taking place in many university hospitals, medical centers, and other institutions around the country. Each year, scientists find out more about what causes the disease, how to prevent it, and how to improve treatment.

DNA changes

A great deal of research is being done to learn what DNA changes cause the cells of the oral cavity and oropharynx to become cancerous.

One of the changes often found in DNA of oral cancer cells is a mutation of the TP53 gene. The protein produced by this gene (called p53) normally works to prevent cells from growing too much and helps to destroy cells with too much damage for the cells to repair. Changes in the TP53 gene can lead to increased growth of abnormal cells and formation of cancers. Some studies suggest that tests to detect these gene changes may allow oral and oropharyngeal tumors to be found early. These tests may also be used to better find cancer cells that may have been left behind after the tumor is removed and to determine which tumors are most likely to respond to surgery or radiation therapy.
Another DNA change found in some oropharyngeal cancer cells (and less often in oral cancer cells) is the presence of DNA from a human papilloma virus (HPV). Some parts of the HPV DNA instruct the cells to make proteins that inactivate the p53 protein, which may allow the cancer cells to grow and divide. Studies are looking at whether tests to detect HPV DNA could help diagnose these cancers.

In addition, most studies suggest that oropharyngeal cancers that are linked with HPV tend to have a better outcome than those without HPV. Studies are being done to see if HPV-linked cancers can be treated less aggressively without reducing survival. Researchers are also working on treatments aimed at HPV infections or that target HPV-infected cancer cells.

Prevention

Chemoprevention

As mentioned in the section Can Oral Cavity and Oropharyngeal Cancers Be Prevented? doctors are looking for medicines to help prevent these cancers, particularly in people at increased risk, such as those with leukoplakia or erythroplakia.

So far, studies using isotretinoin (13-cis-retinoic acid) and other drugs related to vitamin A (retinoids) have not found any long-term benefit in helping patients avoid cancer or live longer.

Several other types of drugs are now being tested to help prevent these cancers. Non-steroidal anti-inflammatory drugs (NSAIDs), such as sulindac and celecoxib are being tested as chemopreventive drugs. Erlotinib (Tarceva®), a drug that blocks the epidermal growth factor receptor (EGFR) from signaling cells to grow, is also being tested for chemoprevention of head and neck cancers. Some early research has found that certain extracts of black raspberries may help prevent these cancers. Another compound showing some promise is known as Bowman-Birk inhibitor (BBI), a protein derived from soybeans.

All of these drugs and compounds would need further study before they could be recommended.

Treatment

HPV related cancers
Because cancers linked to the HPV virus seem to behave differently from other oral cavity and oropharyngeal cancers, they are being studied separately in some clinical trials.

**Surgery**

Doctors continue to refine surgery techniques to try to limit the amount of normal tissue that is removed along with the tumor. This may help limit the side effects after treatment.

**Sentinel lymph node mapping and biopsy:** In many oral cancers, the nearby lymph nodes are routinely removed during surgery (known as a lymph node dissection). A sentinel lymph node biopsy can help the doctor determine whether the cancer has spread to these nodes beforehand, which may allow the patient to avoid this surgery if the cancer has not spread. Sentinel node mapping and biopsy helps the doctor identify and examine the sentinel node(s) — the one(s) that the cancer would have spread to first before it went to other nodes. If this node doesn't contain cancer, it’s very unlikely that any other nodes would contain cancer either.

In this procedure, the surgeon injects a radioactive material around the tumor, usually the day before surgery. The material will travel the same route that any cancer cells would likely have taken if they went to the lymph nodes. On the day of surgery a blue dye is injected into the tumor site, which will also travel to the nearby lymph nodes.

During surgery, the surgeon can use a radiation detector to find the lymph node region that the radioactivity (and presumably the cancer) may have spread to. The surgeon then cuts into the area to look for radioactive or blue stained lymph nodes. These are removed and examined by a pathologist. If there is no cancer, then no further surgery is needed. If there is cancer, then all the lymph nodes in the area will be removed.

Most doctors still consider this procedure to be experimental for cancers of the mouth and throat, and more work is needed to tell if this can replace routine lymph node removals.

**New chemotherapy approaches**

A great deal of research is focusing on improving results from chemotherapy (chemo) in people with these cancers. This includes finding the best time to give these drugs, figuring out which combinations of drugs work best, and determining how best to use these drugs with other forms of treatment.
Researchers also continue to develop new chemo drugs that might be more effective against advanced oral and oropharyngeal cancers.

In one newer approach to treating head and neck cancers, the doctor injects the drug directly into the tumor (intralesional chemo). Success with this approach has been limited in the past because the drug tended to spread out of the tumors and to nearby tissues and the rest of the body quite quickly. Recent advances in preparing the drug solution so that it remains in the tumor (such as suspending it in a gel) have renewed interest in this treatment.

**New radiotherapy methods**

Doctors are always looking at newer ways of focusing radiation on tumors more precisely to help them get more radiation to the tumor while limiting side effects to nearby areas. This is especially important for head and neck tumors like oral cavity and oropharyngeal cancers, where there are often many important structures very close to the tumor. With more powerful computers and newer radiation techniques, doctors are now able to plan and deliver radiation therapy more precisely than ever before.

**Stereotactic radiosurgery/stereotactic radiotherapy:** This type of treatment delivers a large, precise radiation dose to the tumor area in a single session (called radiosurgery, though there is no actual surgery involved) or in a few sessions (radiotherapy).

This treatment is used mostly for some brain and spinal cord tumors, but some doctors are now using it to treat recurrent oropharyngeal cancer.

**Proton beam therapy:** This approach uses a beam of protons rather than x-rays to kill cancer cells. Unlike x-rays, which release energy both before and after they hit their target, protons cause little damage to tissues they pass through and then release their energy after traveling a certain distance. In theory, this allows more radiation to go to the tumor with less damage to nearby normal tissues. Proton beam therapy requires highly specialized equipment and is not widely available. At this time, it is not clear that this type of radiation is any better than more standard approaches to radiation therapy (such as intensity modulated radiation therapy) in treating mouth and throat cancers.

More information about proton beam radiation and stereotactic approaches can be found in our document *A Guide to Radiation Therapy*.

**Targeted therapy**
Clinical trials are studying several targeted therapies that block the action of substances (such as growth factors and growth factor receptors) that cause head and neck cancers to grow and spread.

Several drugs that target the epidermal growth factor receptor (EGFR) may help treat oral and oropharyngeal cancers. Cetuximab (Erbitux) is already approved for use against these cancers. Other drugs now being studied include erlotinib (Tarceva®), panitumumab (Vectibix®), and lapatinib (Tykerb®).

Drugs that block the growth of blood vessels tumors need to survive, such as bevacizumab (Avastin®) and sunitinib (Sutent®), are now being studied for use against these cancers as well.

Doctors are also studying several other types of targeted drugs.

**Vaccines**

Most people think of vaccines as a way to prevent infectious diseases such as polio or measles. As mentioned earlier, vaccines against human papilloma virus (HPV) infection are already being used to help prevent cervical cancer. They may have the added benefit of preventing some oral cancers as well, although they won't help treat the disease.

However, some vaccines are being studied as a way to treat people with cancer by helping their immune system recognize and attack the cancer cells. Many of these vaccines use dendritic cells (cells of the immune system), which are removed from the patient’s blood and exposed in the lab to something that makes them attack tumor cells. The dendritic cells are then injected back into the body, where they should induce other immune system cells to attack the patient’s cancer.

**Gene therapy**

New discoveries about how changes in the DNA of cells in the mouth and throat cause these cells to become cancerous are being applied to experimental treatments intended to reverse these changes. Gene therapies that interfere with the growth-stimulating effect of certain HPVs are also being developed. Another type of gene therapy adds new genes to the cancer cells to make them more susceptible to being killed by certain drugs. These forms of treatment are still in the earliest stages of study, so it will probably be several years before we know if any of them are effective.

- References