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# Oral Cavity and Oropharyngeal Cancer Causes, Risk Factors, and Prevention

## Risk Factors

A risk factor is anything that affects your chance of getting a disease such as cancer. Learn more about the risk factors for oral cavity and oropharyngeal cancer.

- [Risk Factors for Oral Cavity and Oropharyngeal Cancers](#)
- [What Causes Oral Cavity and Oropharyngeal Cancers?](#)

## Prevention

There's no way to prevent all oral cavity and oropharyngeal cancers. But there are things you can do that might help lower your risk. Learn more here.

- [Can Oral Cavity and Oropharyngeal Cancers Be Prevented?](#)

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# Risk Factors for Oral Cavity and Oropharyngeal Cancers

A risk factor is anything that changes a person's chance of getting a disease such as cancer. Different cancers have different risk factors. For example, exposing skin to strong sunlight is a risk factor for skin cancer. Smoking is a risk factor for many cancers.

There are different kinds of risk factors. Some, such as your age or race, can't be changed. Others may be related to personal choices such as smoking, drinking, or diet. Some factors influence risk more than others. But risk factors don't tell us everything. Having a risk factor, or even many, does not mean that a person will get the disease. Not having any risk factors doesn't mean that you won't get it, either.

Some people who have oral cavity or oropharyngeal cancer have few or no known risk factors, and others who have risk factors never develop the disease. Even if someone does have risk factors, it's impossible to know for sure how much they contributed to causing the cancer.

## **Tobacco and alcohol**

Tobacco and alcohol use are 2 of the strongest risk factors for oral cavity and oropharyngeal cancers.

### **Tobacco use**

Most people with oral cavity and oropharyngeal cancers use [tobacco](#)<sup>1</sup>, and the risk of developing these cancers is related to how much and how long they smoked or chewed.

Smokers are many times more likely than non-smokers to develop these cancers. Tobacco smoke from cigarettes, cigars, or pipes can cause cancers anywhere in the mouth or throat. It can also cause cancers of the larynx (voice box), lungs, esophagus (swallowing tube), kidneys, bladder, and many other organs.

Pipe smoking is linked to a very high risk for cancer in the part of the lips that touch the pipe stem.

It's important for smokers who have been treated for oral cavity or oropharyngeal cancer to quit smoking, even if their cancer seems to be cured. Continuing to smoke greatly increases their risk of developing a [second cancer](#)<sup>2</sup> in the mouth, throat, larynx (voice box), or lung.

[Oral tobacco products](#)<sup>3</sup> (snuff, dip, spit, chew, or dissolvable tobacco) are linked with cancers of the cheek, gums, and inner surface of the lips. Using oral tobacco products for a long time is linked to a very high risk. These products also cause gum disease, destruction of the bone sockets around teeth, and tooth loss. It's also important for people who have been treated for oral cavity or oropharyngeal cancer to give up all oral tobacco products.

Please call us for help quitting tobacco or see [How to Quit Smoking or Smokeless Tobacco](#)<sup>4</sup> for more information.

## **Drinking alcohol**

Drinking alcohol increases the risk of developing oral cavity and oropharyngeal cancers. About 7 out of 10 patients with oral cancer are heavy drinkers.

## **Drinking and smoking together**

The risk of these cancers is even higher in people who both smoke and drink alcohol, with the highest risk in heavy smokers and drinkers. According to some studies, the risk of these cancers in heavy drinkers and smokers may be as much as 100 times higher than the risk in people who don't smoke or drink.

## **Betel quid and gutka**

In Southeast Asia, South Asia, and certain other areas of the world, many people chew betel quid, which is made up of areca nut (betel nut), spices, lime, and other ingredients. Many people in these areas also chew gutka, a mixture of betel quid and tobacco. People who chew betel quid or gutka have an increased risk of cancer of the mouth.

## **Human papillomavirus (HPV) infection**

Human papillomavirus (HPV) is a group of more than 150 types of viruses. They're called *papillomaviruses* because some of them cause a type of growth called a papilloma. Papillomas are not cancers, and are more commonly called *warts*.

HPV types are given numbers. Infection with certain types of HPV can cause some forms of cancer, including cancers of the penis, cervix, vulva, vagina, anus, mouth, and throat. The type linked to throat cancer (including cancer of the oropharynx) is HPV16.

Most people with HPV infections of the mouth and throat have no symptoms, and only a very small percentage develop oropharyngeal cancer. At this time the US Food and Drug Administration has not approved a test for HPV infection of the mouth and throat.

The number of oropharyngeal cancers linked to HPV has risen dramatically over the past few decades. And research has shown that these cancers are becoming more common in younger people with no history of alcohol abuse or tobacco use than they were in the past. HPV DNA (a sign of HPV infection) is found in about 2 out of 3

oropharyngeal cancers and in a much smaller fraction of oral cavity cancers. The reason for the rising rate of HPV-linked cancers is unclear, although some think that it could be because of changes in sexual practices in recent decades, in particular an increase in oral sex.

See [HPV \(human papillomavirus\)](#)<sup>5</sup> to learn more about HPV and HPV prevention.

## **Gender**

Oral and oropharyngeal cancers are twice as common in men than in women. This might be because men have been more likely to use tobacco and alcohol in the past.

## **Age**

Cancers of the oral cavity and oropharynx usually take many years to develop, so they're not common in young people. Most patients with these cancers are older than 55 when the cancers are first found. But this may change as HPV-linked cancers become more common.

## **Ultraviolet (UV) light**

Sunlight is the main source of UV light for most people. Cancers of the lip are more common in people who have outdoor jobs where they are exposed to sunlight for long periods of time.

## **Poor nutrition**

Several studies have found that a diet low in fruits and vegetables is linked with an increased risk of cancers of the oral cavity and oropharynx.

## **Weakened immune system**

Oral cavity and oropharyngeal cancers are more common in people who have a weak immune system. A weak immune system can be caused by certain diseases present at birth, the acquired immunodeficiency syndrome (AIDS), and certain medicines (such as those given after organ transplants).

## **Graft-versus-host disease**

Graft-versus-host disease (GVHD) is a condition that sometimes occurs after a [stem cell transplant](#)<sup>6</sup>. During this medical procedure, blood stem cells from a donor are used to replace bone marrow that has been destroyed by disease, chemotherapy, or radiation. GVHD occurs when the donor stem cells recognize the patient's cells as foreign and launch an attack against them. GVHD can affect many tissues of the body, including those in the mouth. This increases the risk of oral cancer, which can occur as early as 2 years after GVHD.

## Genetic syndromes

People with certain syndromes caused by [inherited defects \(mutations\) in certain genes](#)<sup>7</sup> have a very high risk of mouth and throat cancer.

- **Fanconi anemia** is a condition that can be caused by inherited defects in several genes that help repair DNA. People with this syndrome often have blood problems at an early age, which may lead to leukemia or aplastic anemia. They also have a very high risk of cancer of the mouth and throat.
- **Dyskeratosis congenita** is a genetic syndrome that can cause aplastic anemia, skin rashes, and abnormal fingernails and toenails. People with this syndrome also have a very high risk of developing cancer of the mouth and throat at a young age.

## Lichen planus

This disease occurs mainly in middle-aged people. Most often it affects the skin (usually as an itchy rash), but it sometimes affects the lining of the mouth and throat, appearing as small white lines or spots. A severe case may slightly increase the risk of oral cancer.

## Unproven or controversial risk factors

### Mouthwash

Some studies have suggested that mouthwash with a high alcohol content might be linked to a higher risk of oral and oropharyngeal cancers. But recent research has questioned these results. Studying this possible link is complicated by the fact that smokers and frequent drinkers (who already have an increased risk of these cancers) are more likely to use mouthwash than people who neither smoke nor drink.

## Irritation from dentures

It's been suggested that long-term irritation of the lining of the mouth caused by poorly fitting dentures is a risk factor for oral cancer. But many studies have found no increased risk in denture wearers overall.

Poorly fitting dentures can tend to trap agents that have been proven to cause oral cancer, such as alcohol and tobacco particles, so denture wearers should have them checked by a dentist regularly to ensure a good fit. All denture wearers should remove their dentures at night and clean and rinse them thoroughly every day.

## Oral health

Studies have suggested the overall health of the mouth, teeth, and gums may impact oral cavity and oropharyngeal cancer risk because of changes in the normal bacteria in the mouth. Poor oral hygiene, which can lead to tooth loss, may also be linked to these cancers. Overall survival may also be affected. More research is needed, but regular dental visits, as well as brushing and flossing, may lessen these risks and have many other health benefits, too.

## Hyperlinks

1. [www.cancer.org/cancer/cancer-causes/tobacco-and-cancer.html](http://www.cancer.org/cancer/cancer-causes/tobacco-and-cancer.html)
2. [www.cancer.org/cancer/oral-cavity-and-oropharyngeal-cancer/after-treatment/second-cancers.html](http://www.cancer.org/cancer/oral-cavity-and-oropharyngeal-cancer/after-treatment/second-cancers.html)
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6. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/stem-cell-transplant.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/stem-cell-transplant.html)
7. [www.cancer.org/cancer/cancer-causes/genetics/family-cancer-syndromes.html](http://www.cancer.org/cancer/cancer-causes/genetics/family-cancer-syndromes.html)

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# What Causes Oral Cavity and Oropharyngeal Cancers?

Doctors and scientists can't say for sure what causes each case of [oral cavity or oropharyngeal cancer](#)<sup>1</sup>. But they do know many of the [risk factors](#) and how some of them may lead to cells becoming cancerous.

Scientists believe that some risk factors, such as tobacco or heavy alcohol use, may cause these cancers by damaging the DNA of cells that line the inside of the mouth and throat.

DNA is the chemical in each of our cells that makes up our [genes](#)<sup>2</sup> — the instructions for how our cells function. We usually look like our parents because they are the source of our DNA. However, DNA affects more than how we look. Some genes called [proto-oncogenes](#)<sup>3</sup> can help control when cells grow and divide. DNA changes can change these into genes that promote cell division that are called *oncogenes*. Some genes that slow down cell division or make cells die at the right time and are called *tumor suppressor genes*. DNA changes can turn off tumor suppressor genes, and lead to cells growing out of control. Cancers can be caused by DNA changes that create oncogenes or turn off tumor suppressor genes.

When tobacco and alcohol damage the cells lining the mouth and throat, the cells in this layer must grow more rapidly to repair this damage. The more often cells need to divide, the more chances there are for them to make mistakes when copying their DNA, which may increase their chances of becoming cancer.

Many of the chemicals found in tobacco can damage DNA directly. Scientists are not sure whether alcohol directly damages DNA, but they have shown that alcohol helps many DNA-damaging chemicals get into cells more easily. This may be why the combination of tobacco and alcohol damages DNA far more than tobacco alone.

This damage can cause certain genes (for example, those in charge of starting or stopping cell growth) to malfunction. Abnormal cells can begin to build up, forming a tumor. With additional damage, the cells may begin to spread into nearby tissue and to distant organs.

In [human papillomavirus](#)<sup>4</sup> (HPV) infections, the virus causes cells to make 2 proteins known as E6 and E7. When these are made, they turn off some genes that normally help keep cell growth in check. Uncontrolled cell growth may in some cases lead to cancer. When HPV DNA is found in the tumor cells, especially in non-smokers who



drink little or no alcohol, HPV is thought to be the likely cause of the cancer.

Some people inherit DNA mutations (changes) from their parents that increase their risk for developing certain cancers. But [inherited oncogene or tumor suppressor gene mutations](#)<sup>5</sup> are not believed to cause very many cancers of the oral cavity or oropharynx.

Some oral cavity and oropharyngeal cancers have no clear cause. Some of these cancers may be linked to other, as of yet unknown risk factors. Others may have no external cause — they may just occur because of random DNA changes (mutations) inside a cell.

## Hyperlinks

1. [www.cancer.org/cancer/oral-cavity-and-oropharyngeal-cancer/about/what-is-oral-cavity-cancer.html](http://www.cancer.org/cancer/oral-cavity-and-oropharyngeal-cancer/about/what-is-oral-cavity-cancer.html)
2. [www.cancer.org/cancer/cancer-causes/genetics/genes-and-cancer/what-are-genes.html](http://www.cancer.org/cancer/cancer-causes/genetics/genes-and-cancer/what-are-genes.html)
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4. [www.cancer.org/cancer/cancer-causes/infectious-agents/hpv.html](http://www.cancer.org/cancer/cancer-causes/infectious-agents/hpv.html)
5. [www.cancer.org/cancer/cancer-causes/genetics/family-cancer-syndromes.html](http://www.cancer.org/cancer/cancer-causes/genetics/family-cancer-syndromes.html)

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# Can Oral Cavity and Oropharyngeal Cancers Be Prevented?

## Avoid risk factors

Not all cases of [oral cavity and oropharyngeal cancer](#)<sup>1</sup> can be prevented, but the risk of developing these cancers can be greatly reduced by avoiding certain [risk factors](#).

## Limit smoking and drinking

Tobacco and alcohol are among the most important risk factors for these cancers. Not starting to smoke is the best way to limit the risk of getting these cancers. [Quitting tobacco](#)<sup>2</sup> also greatly lowers your risk of developing these cancers, even after many years of use. The same is true of heavy drinking. Limit how much alcohol you drink, if you drink at all.

### **Avoid HPV infection**

The risk of infection of the mouth and throat with the [human papillomavirus](#)<sup>3</sup> (HPV) is increased in those who have oral sex and multiple sex partners. But HPV is very common and rarely causes symptoms, so having sex with even one other person can put you at risk.

These infections are also more common in smokers, which may be because the smoke damages their immune system or the cells that line the oral cavity.

Although HPV infection is linked to most cases of oropharyngeal cancer, most people with HPV infections of the mouth and throat do not go on to develop this cancer.

In recent years, [vaccines that reduce the risk of infection with certain types of HPV](#)<sup>4</sup> have become available. These vaccines were originally meant to lower the risk of [cervical cancer](#)<sup>5</sup>, but they have been shown to lower the risk of other cancers linked to HPV as well, such as cancers of the penis, anus, vulva, and vagina. HPV vaccination also likely lowers the risk of mouth and throat cancers, but this has not yet been proven.

Since these vaccines are only effective if given before someone is infected with HPV, they're given when a person is young, before they're likely to become sexually active.

See our [HPV information](#)<sup>6</sup> to learn more.

### **Limit exposure to ultraviolet (UV) light**

[Ultraviolet radiation](#)<sup>7</sup> is an important and avoidable risk factor for cancer of the lips, as well as for [skin cancer](#)<sup>8</sup>. If possible, limit the time you spend outdoors during the middle of the day, when the sun's UV rays are strongest. If you are out in the sun, wear a wide-brimmed hat and use sunscreen and lip balm with a sun protection factor (SPF) of at least 30.

### **Eat a healthy diet**

A poor diet has been linked to oral cavity and oropharyngeal cancers, although it's not

exactly clear what substances in healthy foods might be responsible for reducing the risk of these cancers.

In general, eating a healthy diet is much better than adding vitamin supplements to an otherwise unhealthy diet. The American Cancer Society recommends a healthy diet that emphasizes plant foods. This includes eating at least 2½ cups of vegetables and fruits every day. Choosing whole-grain breads, pastas, and cereals instead of refined grains, and eating fish, poultry, or beans instead of processed meat and red meat may also help lower your risk of cancer. See the [American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention](#)<sup>9</sup> for our full guidelines.

### **Wear properly fitted dentures**

Avoiding sources of oral irritation (such as dentures that don't fit properly) may help lower your risk for oral cancer.

### **Treat pre-cancerous growths**

Areas of [leukoplakia or erythroplakia](#)<sup>10</sup> in the mouth sometimes progress to cancer. Doctors often remove these areas, especially if a biopsy shows they contain areas of dysplasia (abnormal growth) when looked at under a microscope.

But removing areas of leukoplakia or erythroplakia doesn't always keep someone from getting oral cavity cancer. Studies have found that even when these areas are completely removed, people with certain types of erythroplakia and leukoplakia still have a higher chance of developing a cancer in some other area of their mouth.

This may be because the whole lining of the mouth has probably been exposed to the same cancer-causing agents that led to these pre-cancers (like tobacco). This means that the entire area may already have early changes that can lead to cancer. This concept is called *field cancerization*.

It's important for people who have had these areas removed to continue having check-ups to look for cancer and new areas of leukoplakia or erythroplakia.

### **Hyperlinks**

1. [www.cancer.org/cancer/oral-cavity-and-oropharyngeal-cancer/about/what-is-oral-cavity-cancer.html](http://www.cancer.org/cancer/oral-cavity-and-oropharyngeal-cancer/about/what-is-oral-cavity-cancer.html)
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