Laryngeal and Hypopharyngeal Cancer Causes, Risk Factors, and Prevention

Risk Factors

A risk factor is anything that increases your chance of getting a disease such as cancer. Learn more about the risk factors for laryngeal and hypopharyngeal cancers.

- Risk Factors for Laryngeal and Hypopharyngeal Cancers
- What Causes Laryngeal and Hypopharyngeal Cancers?

Prevention

There is no way to completely prevent laryngeal or hypopharyngeal cancer. But there are things you can do that might lower your risk. Learn more.

- Can Laryngeal and Hypopharyngeal Cancers Be Prevented?

Risk Factors for Laryngeal and Hypopharyngeal Cancers

A risk factor is anything that increases your chance of getting a disease like cancer. Different cancers have different risk factors. Some risk factors, like smoking, can be changed. Others, like a person’s age or family history, can’t be changed.
But risk factors don’t tell us everything. Having a risk factor, or even several risk factors, doesn’t mean that you will get the disease. And many people who get the disease have few or no known risk factors.

Laryngeal and hypopharyngeal cancers are often grouped with other cancers of the mouth and throat (commonly called head and neck cancers). These cancers often have many of the same risk factors listed below.

**Tobacco and alcohol use**

**Tobacco use** is the most important risk factor for head and neck cancers (including cancers of the larynx and hypopharynx). People who smoke have a much higher risk for these cancers than people who don't smoke. Most people with these cancers have a history of smoking or some other tobacco exposure. The more you smoke, the greater your risk. Smoke from cigarettes, pipes, and cigars all increase your risk of getting these cancers.

Some studies have also found that long-term exposure to secondhand smoke might increase the risk of these cancers, but more research is needed to confirm this.

Moderate or heavy alcohol use (more than 1 drink a day) also increases the risk of these cancers, although not as much as smoking.

**People who use both tobacco and alcohol have the highest risk of all.** Combining these 2 habits doesn’t just add both risks together, it actually multiplies them. People who smoke and drink are many times more likely to get head and neck cancer than people who don't have these habits.

If you are thinking about quitting smoking and need help, call the American Cancer Society at 1-800-227-2345. A tobacco cessation and counseling program can help increase your chances of quitting for good. More helpful information on quitting is also in **Stay Away from Tobacco**.

**Human papillomavirus infection**

**Human papillomavirus** (HPV) is a group of over 150 related viruses. They are called *papillomaviruses* because some of them cause a type of growth called a papilloma, also known as a wart.

Infection with certain types of HPV can also cause some forms of cancer, including cancers of the penis, cervix, vulva, vagina, anus, and throat. Other types of HPV cause
benign (not cancer) warts in different parts of the body.

The rate of head and neck cancers related to HPV infection have been rising mainly for cancers of the throat (oropharynx). But HPV infection is a rare risk factor for cancers of the larynx and hypopharynx.

**Excess body weight**

Weighing too much for your height appears to increase the risk of cancers of the larynx and oropharynx. Eating more plant-based foods, such as non-starchy vegetables and whole fruit, might help people lose weight as well as reduce their laryngeal and oropharyngeal cancer risk.

**Poor nutrition**

Poor nutrition might increase the risk of getting hypopharyngeal cancer. The exact reason for this is not clear. Heavy drinkers often have vitamin deficiencies because they don't eat enough, which may help explain the role of alcohol in increasing the risk for these cancers.

**Plummer-Vinson syndrome:** People with this syndrome typically have poor nutrition because of rings of thin tissue (also called webs) in their esophagus that make it hard to swallow. They commonly have anemia from low iron levels. Having this syndrome puts people at risk of esophageal and hypopharyngeal cancers.

**Genetic syndromes**

People with syndromes caused by inherited gene defects (mutations) have a very high risk of throat cancer, including cancer of the hypopharynx.

**Fanconi anemia:** People with this syndrome often have blood problems at an early age, which may lead to leukemia or myelodysplastic syndrome. They also have a very high risk of cancer of the mouth and throat, including laryngeal and hypopharyngeal cancers.

**Dyskeratosis congenita:** This genetic syndrome can cause aplastic anemia, skin rashes, and abnormal fingernails and toenails. People with this syndrome have a very high risk of developing head and neck cancers, especially of the mouth and throat, when they are young.
Workplace exposures

Long and intense exposures to wood dust, paint fumes, and certain chemicals used in the metalworking, petroleum, construction, and textile industries can increase the risk of laryngeal and some hypopharyngeal cancers.

Asbestos\textsuperscript{13} is a mineral fiber that was often used as an insulating material in many products in the past. Exposure to asbestos is an important risk factor for lung cancer\textsuperscript{14} and mesothelioma\textsuperscript{15} (cancer that starts in the lining of the chest or abdomen). Some studies have suggested a link between asbestos exposure and laryngeal cancer, but not all studies agree.

Gender

Cancers of the larynx and hypopharynx are about 5 times more common in men than women. This is likely because the main risk factors smoking and heavy alcohol use are more common in men. But in recent years, as these habits have become more common among women, their risks for these cancers have increased as well.

Age

Cancers of the larynx and hypopharynx usually develop over many years, so they are not common in young people. Over half of patients with these cancers are 65 or older when the cancers are first found.

Race

Cancers of the larynx and hypopharynx are more common among African Americans and non-Hispanic whites than among Asian/Pacific Islanders and American Indian/Alaska Natives.

Gastroesophageal reflux disease

When acid from the stomach backs up into the esophagus it’s called gastroesophageal reflux disease (GERD). GERD can cause heartburn and increase the chance of cancer of the esophagus\textsuperscript{16}. GERD is also thought to raise a person’s risk of hypopharyngeal cancers, but more studies are being done on this.

Hyperlinks

References


Lee PN, Thornton AJ, Hamling JS. Epidemiological evidence on environmental tobacco smoke and cancers other than lung or breast. *Regul Toxicol Pharmacol*. 2016;80:134-


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What Causes Laryngeal and Hypopharyngeal Cancers?

We don’t know what causes each case of laryngeal or hypopharyngeal cancer. But we do know many of the risk factors for these cancers (see Risk Factors for Laryngeal and Hypopharyngeal Cancers) and how some of them cause normal cells to become cancer.

The development of normal human cells mostly depends on the information contained in the cells' DNA. DNA is the chemical in our cells that makes up our genes, which control how our cells work. We look like our parents because they are the source of our DNA. But DNA affects more than just how we look.

Some genes control when cells grow, divide, and die:

- Genes that help cells grow, divide, and stay alive are called proto-oncogenes
- Genes that help keep cell growth under control or make cells die at the right time are called tumor suppressor genes

Cancers can be caused by DNA mutations (gene changes) that turn on proto-oncogenes or turn off tumor suppressor genes. This leads to cells growing out of control. Changes in many different genes are usually needed to cause laryngeal and hypopharyngeal cancer.

For more about how gene changes can lead to cancer, see Genes and Cancer.

Tobacco and alcohol: Scientists believe that some risk factors, such as tobacco or heavy alcohol use, cause these cancers by damaging the DNA of the cells that line the inside of the larynx and hypopharynx.

Inherited and acquired gene mutations: Some people inherit DNA mutations (changes) from their parents that greatly increase their risk for developing certain cancers. But inherited gene mutations are not believed to cause very many cancers of the larynx or hypopharynx.

Gene changes related to these cancers usually happen during life, rather than being inherited. These acquired mutations often result from exposure to cancer-causing chemicals, like those found in tobacco smoke. An acquired change in the p16 tumor suppressor gene seems to be important in laryngeal and hypopharyngeal cancers,
although not all these cancers have this change. Several different gene changes are probably needed for cancer to develop, and not all of these changes are understood at this time.

Inherited mutations of proto-oncogenes or tumor suppressor genes rarely cause these cancers, but some people seem to inherit a poor ability to detoxify (break down) certain types of cancer-causing chemicals. They are more sensitive to the cancer-causing effects of tobacco smoke, alcohol, and certain industrial chemicals.

**Human papillomavirus (HPV):** Some types of HPV are important causes of middle throat (oropharyngeal) cancers and are sometimes seen with laryngeal cancers. HPV has two proteins known as E6 and E7 which turn off some tumor suppressor genes, such as p53 and Rb. This may allow the cells lining the larynx to grow out of control and to develop changes in additional genes, which in some cases can lead to cancer.

**Hyperlinks**


**References**


Can Laryngeal and Hypopharyngeal Cancers Be Prevented?

Not all laryngeal and hypopharyngeal cancers can be prevented, but the risk of developing these cancers can be greatly reduced by avoiding certain risk factors such as smoking and drinking alcohol.

Avoid tobacco and alcohol

Tobacco use is the most important cause of these cancers. Avoiding exposure to tobacco (by not smoking and avoiding secondhand smoke) lowers the risk of these cancers. Heavy alcohol use is a risk factor on its own. It also greatly increases the cancer-causing effect of tobacco smoke. So it’s especially important to avoid alcohol as well as the combination of drinking and smoking.

Avoid workplace chemicals

For people who work with chemicals linked to these cancers, having plenty of workplace ventilation and using industrial respirators are important protective measures.

Watch your eating habits and weight

Poor nutrition, excess body weight, and vitamin deficiencies have been linked to laryngeal and hypopharyngeal cancers. Following a healthy eating pattern may help lower your risk of these cancers (and many others). The American Cancer Society recommends following a healthy eating pattern that includes plenty of fruit, vegetables, and whole grains, and that limits or avoids red and processed meats, sugary drinks, and
highly processed foods. In general, eating a healthy diet is much better than adding vitamin supplements to an otherwise unhealthy diet. See the American Cancer Society Guidelines for Diet and Physical Activity⁵ for our full guidelines.

Get the HPV vaccine and avoid HPV infection

The risk of human papillomavirus (HPV) infection of the middle throat (oropharynx⁶) is increased in those who have oral sex and multiple sex partners. People who smoke are more likely to get HPV infections, probably because the smoke damages their immune system or the cells that line the throat. These infections are common and rarely cause symptoms. While HPV infection is linked to some cases of cancer of the larynx, most people with HPV infections of the other parts of the throat do not go on to develop this cancer. And most cancers of the larynx and hypopharynx are not related to HPV infection.

Vaccines that reduce the risk of infection with certain types of HPV are available. At first, these vaccines were meant to lower the risk of cervical cancer, but they've also been shown to lower the risk of other cancers linked to HPV⁷, such as cancers of the anus, penis, vulva, vagina, and mouth and throat cancers. These vaccines are only effective if given before someone is infected with HPV, so it is recommended they be given at an early age, but certain adults can also get vaccinated. Learn more in HPV Vaccines⁸.

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References


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