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# Nasopharyngeal Cancer Causes, Risk Factors, and Prevention

## Risk Factors

A risk factor is anything that raises your chance of getting a disease such as cancer. Learn more about the risk factors for nasopharyngeal cancer.

- [Risk Factors for Nasopharyngeal Cancer](#)
- [What Causes Nasopharyngeal Cancer?](#)

## Prevention

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

- [Can Nasopharyngeal Cancer Be Prevented?](#)

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# Risk Factors for Nasopharyngeal Cancer

A risk factor is anything that raises a person's chance of getting a disease such as cancer. Different cancers have different risk factors. Some risk factors, like smoking or diet, 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 many risk factors,

does not mean that you will get the disease. And many people who get the disease may have few or no known risk factors.

Scientists have found risk factors that make a person more likely to develop nasopharyngeal cancer (NPC). These include:

- Gender
- Ethnicity and where you live
- Diet
- Infection with the Epstein-Barr virus
- Family history

Smoking, alcohol, and some workplace exposures may also increase the risk of this cancer.

## **Gender**

NPC is found about twice as often in males as it is in females.

## **Race/ethnicity and where you live**

NPC is most common in southern China (including Hong Kong), Singapore, Vietnam, Malaysia, and the Philippines. It's also fairly common in Northwest Canada and Greenland.

People of south China have a lower risk of NPC if they move to another area that has lower rates of NPC (like the US or Japan), but their risk is still higher than for people who are native to areas with lower risk. Over time, their risk seems to go down. The risk also goes down in new generations. Although whites born in the United States have a low risk of NPC, whites born in China have a higher risk.

In the United States, NPC is most common in Asian and Pacific Islanders (particularly Chinese Americans), followed by American Indian and Alaskan natives, African Americans, whites, and Hispanics/Latinos.

## **Diet**

People who live in parts of Asia, northern Africa, and the Arctic region where NPC is common, typically eat diets very high in salt-cured fish and meat. Indeed, the rate of this

cancer is dropping in southeast China as people begin eating a more Westernized diet. In contrast, some studies have suggested that diets high in nuts, legumes, fruits, and vegetables and low in dairy products and meat may help lower the risk of NPC.

## Epstein-Barr virus infection

Almost all NPC cells contain parts of the Epstein-Barr virus (EBV), and most people with NPC have evidence of EBV infection in their blood. Infection with EBV is very common throughout the world, often occurring in childhood. In the United States, where infection with this virus tends to occur in teens, it's commonly known as mononucleosis ("mono").

The link between EBV infection and NPC is complex and not yet completely understood. EBV infection alone is not enough to cause NPC, since infection with this virus is very common and this cancer is very rare. Other factors, such as a person's genes, may affect how the body deals with EBV, which in turn may affect how EBV contributes to the development of NPC.

## Family history

Family members of people with NPC are more likely to get this cancer. It's not known if this is because of inherited genes, shared environmental factors (such as the same diet or living quarters), or some combination of these.

Just as people have different blood types, they also have different tissue types. Studies have found that people with certain inherited tissue types have an increased risk of developing NPC. Tissue types affect immune responses, so this may be related to how a person's body reacts to EBV infection.

## Other possible risk factors

**Tobacco and alcohol use:** Most (but not all) studies have found that [smoking](#)<sup>1</sup> may contribute to the development of NPC, especially the keratinizing type. Some studies have also linked [heavy drinking](#)<sup>2</sup> to this type of cancer.

**Workplace exposures:** Some studies have suggested that workplace exposure to formaldehyde increases the risk of NPC. Still, not all studies have shown this and this link isn't clear.

## 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/cancer-causes/diet-physical-activity/alcohol-use-and-cancer.html](http://www.cancer.org/cancer/cancer-causes/diet-physical-activity/alcohol-use-and-cancer.html)

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Turati F, Bravi F, Polesel J, et al. Adherence to the Mediterranean diet and nasopharyngeal cancer risk in Italy. *Cancer Causes Control.* 2017;28(2):89-95.

Sinha S, Bhimji SS. Cancer, Nasopharynx. [Updated 2017 Oct 5]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2018 Jan-. Accessed at [www.ncbi.nlm.nih.gov.proxy.library.emory.edu/books/NBK459256/](http://www.ncbi.nlm.nih.gov.proxy.library.emory.edu/books/NBK459256/) on April 19, 2018.

See all references for Nasopharyngeal Cancer  
([www.cancer.org/cancer/nasopharyngeal-cancer/references.html](http://www.cancer.org/cancer/nasopharyngeal-cancer/references.html))

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## What Causes Nasopharyngeal Cancer?

The exact cause of most cases of nasopharyngeal cancer (NPC) is not known. But scientists have found that it's linked with certain diets, infections, and inherited characteristics. (See [Risk Factors for Nasopharyngeal Cancer](#).)

In recent years, scientists have studied how the Epstein-Barr virus (EBV) may cause cells in the nasopharynx to become cancer, but there's still a lot to learn. In developed countries, most people infected with EBV have infectious mononucleosis (mono), and their immune system is able to recognize and destroy the virus. These people recover without any long-term problems. But in some cases, pieces of EBV DNA mix with the DNA of cells in the nasopharynx.

DNA is the chemical in each of our cells that makes up our genes, the instructions for how our cells work. For instance, we often look like our parents because they're the source of our DNA. But DNA affects more than how we look. Some genes contain instructions that control when cells grow and divide into new cells. Viruses like EBV also contain DNA. When a cell is infected with the virus, the viral DNA may mix with the normal human DNA. Then the EBV DNA may instruct the cells of the nasopharynx to divide and grow in an abnormal way. Still, EBV infection rarely leads to NPC, so other factors probably play a role in whether or not it causes cancer.

For instance, eating a diet high in salt-cured fish and meat seems to increase the ability of EBV to cause NPC. Studies show that foods preserved in this way may produce chemicals that can damage DNA. The damaged DNA then alters a cell's ability to control its growth and replication.

Some studies suggest that inheriting certain tissue types may contribute to a person's risk of developing NPC. Because the tissue type plays a role in the function of the immune system, some scientists suspect that an abnormal immune reaction to EBV infection may be involved. The details of how certain tissue types might increase NPC risk are still being worked out.

## References

Sinha S, Bhimji SS. Cancer, Nasopharynx. [Updated 2017 Oct 5]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2018 Jan-. Accessed at [www.ncbi.nlm.nih.gov.proxy.library.emory.edu/books/NBK459256/](http://www.ncbi.nlm.nih.gov.proxy.library.emory.edu/books/NBK459256/) on April 20, 2018.

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# Can Nasopharyngeal Cancer Be Prevented?

Most people in the United States who develop nasopharyngeal cancer (NPC) have no [risk factors](#) that can be controlled, so their cancers could not have been prevented. The possible links with [tobacco](#)<sup>1</sup> and [heavy alcohol use](#)<sup>2</sup> are not yet clear, so we don't know if avoiding these can lower a person's risk of NPC. Still, both tobacco and alcohol use have clearly been linked to many other cancers, as well as other health problems, so avoiding them can have many health benefits.

Infection with Epstein-Barr virus (EBV) has been linked to NPC. Scientists are trying to create an EBV vaccine, but at this time there's no known way to prevent this infection.

Because certain types of foods have been linked with NPC risk, reducing or not eating some types of food may lower the number of cases. This is especially true in parts of the world where NPC is common, such as southern China, northern Africa, and the Arctic region. Descendants of Southeast Asians who immigrated to the United States and eat a typical American diet, for example, have a lower risk of developing NPC. But these dietary factors are not thought to account for all cases of NPC in most other parts of the world. Other factors, such as genetics, are likely to play a part as well.

## 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/cancer-causes/diet-physical-activity/alcohol-use-and-cancer.html](http://www.cancer.org/cancer/cancer-causes/diet-physical-activity/alcohol-use-and-cancer.html)

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