Nasal Cavity and Paranasal Sinus 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 nasal cavity and paranasal sinus cancer.

- Risk Factors for Nasal Cavity and Paranasal Sinus Cancers
- What Causes Nasal Cavity and Paranasal Sinus Cancers?

Prevention

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

- Can Nasal Cavity and Paranasal Sinus Cancers Be Prevented?

Risk Factors for Nasal Cavity and Paranasal Sinus Cancers

A risk factor is anything that increases your chances of getting a disease like
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, does not mean that you will get the disease. Many people with risk factors never develop these cancers, while people with these cancers may have few or no known risk factors.

Researchers have found a few risk factors that make a person more likely to develop nasal cavity (nose) and paranasal sinus cancer. Most of these are exposures to inhaled substances in the workplace. Other risk factors are similar to those for other cancers in the head and neck area, such as smoking.

**Workplace exposures**

People who work in certain jobs are more likely to develop nasal cavity and paranasal sinus cancers. The increased risk seems to be related to breathing in certain substances while at work, such as:

- Wood dusts from carpentry (such as furniture and cabinet builders), sawmills, and other wood-related industries
- Dusts from textiles (textile plants)
- Leather dusts (shoemaking)
- Flour (baking and flour milling)
- Nickel and chromium dust
- Mustard gas (a poison used in chemical warfare)
- Radium (a radioactive element rarely used today)

These workplace exposures have less clear links to nasal and paranasal sinus cancer:

- Glues
- Formaldehyde
- Organic solvents

**Smoking**

Smoking increases the risk of nasal cavity cancer, specifically the squamous cell type.

**Human papillomavirus (HPV) infection**
The human papillomavirus (HPV\(^2\)) is a group of over 200 related viruses. They are called **papilloma viruses** because some of them cause a type of benign (not cancer) growth called a papilloma, more commonly known as a wart.

But infection with certain high-risk types of HPV can cause some forms of cancers, including cancers of the cervix\(^3\), vagina\(^4\), anus\(^5\), vulva\(^6\), penis\(^7\), mouth\(^8\), and throat\(^9\). HPV has been found in some cancers of the nasal cavity and paranasal sinuses, but because these cancers are rare, more research is needed to show that HPV infection causes them.

**Gender**

Cancers of the nasal cavity and paranasal sinuses are about 2 times more common in men than women.

**Age**

About 80% (8 out of 10 people) of people diagnosed with cancer of the nasal cavity or paranasal sinus are older than 55 years of age.

**Race**

Cancers of the nasal cavity and paranasal sinuses are much more common among White people than Black people.

**Hereditary retinoblastoma treatment**

People with the hereditary form of retinoblastoma\(^10\), a type of eye cancer that typically develops in children, have an increased risk of nasal cavity cancer if the retinoblastoma was treated with radiation.

**Hyperlinks**


References


What Causes Nasal Cavity and Paranasal Sinus Cancers?

We don’t know what causes each case of nasal cavity or paranasal sinus cancer. But we do know some of the risk factors for these cancers (See Risk Factors for Nasal Cavity and Paranasal Sinus Cancers) and how some of them cause normal cells to become cancer. For example, some risk factors, such as workplace exposure to certain chemicals, may cause these cancers by damaging the DNA of cells that line the inside of the nose and sinuses.

Genes and 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\(^1\) – the instructions for how our cells function. We usually look like our parents because they are the source of our DNA. But, DNA affects more than how we look.

Some genes have instructions for controlling when cells grow, divide, and die:
• Genes that help cells grow, divide, and stay alive are called proto-oncogenes\(^2\,^3\).
• Genes that help keep cell growth under control or make cells die at the right time are called tumor suppressor genes\(^4\).

Cancers can be caused by DNA 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 nasal cavity or paranasal sinus cancer.

For more about how gene changes can lead to cancer, see Genes and Cancer\(^5\).

**Workplace exposures and tobacco**

Scientists believe that some risk factors, such as workplace exposures to certain chemicals and tobacco use\(^6\), cause these cancers by damaging the DNA of the cells that line the inside of the nasal cavity and paranasal sinuses.

**Human papillomavirus (HPV)**

High-risk types of HPV\(^7\) have been linked to oropharyngeal cancers. Some high-risk types of HPV have been found in some nasal cavity and paranasal sinus cancers, but because these types of cancers are very rare, more research is needed to say for sure if HPV infection causes them.

**Inherited and acquired gene mutations**

Some people inherit DNA mutations (changes) from their parents that increase their risk for developing certain cancers. But inherited gene changes are not believed to cause very many cancers of the nasal cavity or paranasal sinuses.

Gene changes related to these cancers usually develop during life rather than being inherited. These acquired mutations are often the result of exposure to cancer-causing chemicals like those found in the workplace or in tobacco smoke. Acquired mutations probably cause most nasal cavity and paranasal sinus cancers, but sometimes they happen for no apparent reason.

Not all cancers have the same gene changes. So far, few specific gene changes have been found in nasal cavity and paranasal sinus cancers.

**Hyperlinks**

References


Last Revised: April 19, 2021
Can Nasal Cavity and Paranasal Sinus Cancers Be Prevented?

Most people with cancer of the nasal cavity (nose) and paranasal sinuses have no known risk factors, so there is currently no way to prevent most of these cancers. But there are some things people can do to lower their risk.

Avoid workplace chemicals and dust

Not all nasal cavity and paranasal sinus cancers can be prevented, but the risk of developing these cancers can be greatly reduced by avoiding exposures to certain substances in the workplace. Fortunately, awareness of the possible danger from these exposures has increased, and workplace safety measures to help protect people have improved. Still, if you are working with any of the substances listed in Risk Factors for Nasal Cavity and Paranasal Sinus Cancers, it’s important for you to find out if you are being protected from harmful exposure.

Avoid smoking

Smoking\(^1\) is another risk factor for cancers of the nasal cavity and sinuses that people can avoid to help prevent the disease.

Hyperlinks


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Last Revised: April 19, 2021

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