About Nasal Cavity and Paranasal Sinus Cancer

Overview and Types

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

- What Are Nasal Cavity and Paranasal Sinus Cancers?

Research and Statistics

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

- What Are the Key Statistics About Nasal Cavity and Paranasal Sinus Cancers?
- What’s New in Nasal Cavity and Paranasal Sinus Cancer Research and Treatment?

What Are Nasal Cavity and Paranasal Sinus Cancers?

To understand these cancers, it helps to know a little about the nasal cavity and paranasal sinuses.

The nasal cavity
The nose opens into the nasal passageway, or cavity. This cavity is a space that runs along the top of the roof of the mouth (the palate, which separates your nose from your mouth) and then turns downward to join the passage from the mouth to the throat.

**The paranasal sinuses**
Sinuses are cavities (spaces) or small tunnels. They are called *paranasal* because they are around or near the nose. The nasal cavity opens into a network of paired sinuses:

- Maxillary sinuses are in the cheek area, below the eyes on either side of the nose.
- Frontal sinuses are above the inner eye and eyebrow area.
- Sphenoid sinuses are situated deep behind the nose, between the eyes.
- Ethmoid sinuses are made up of many sieve-like sinuses formed of thin bone and mucous tissues. They are above the nose, between the eyes.

Normally, these sinuses are filled with air. When you have a cold or sinus infection the sinuses can become blocked (obstructed) and fill with mucus and pus, which can be uncomfortable.

The nasal cavity and paranasal sinuses have several functions:

- They help filter, warm, and moisten the air you breathe.
- They give your voice resonance.
- They lighten the weight of the skull.
- They provide a bony framework for the face and eyes.
The nasal cavity and the paranasal sinuses are lined by a layer of mucus-producing tissue called *mucosa*. The mucosa has many types of cells, including:

- Squamous epithelial cells, which are flat cells that line the sinuses and make up most of the mucosa
- Glandular cells such as minor salivary gland cells, which produce mucus and other fluids
- Nerve cells, which are responsible for sensation and the sense of smell in the nose
- Infection-fighting cells (which are part of the immune system), blood vessel cells, and other supporting cells

Other types of cells in the nasal cavity and paranasal sinuses, including bone and cartilage cells, can also become cancerous.

## Nasal cavity and paranasal sinus cancers

Any of the cells that make up the mucosa can become cancerous, and each type of cancer behaves or grows differently.

- Squamous epithelial cells can become *squamous cell carcinomas*. This is the most common type of cancer in the nasal cavity and paranasal sinuses. It makes up a little over half of cancers of these areas.
- Minor salivary gland cells can turn into *adenocarcinomas*, *adenoid cystic carcinomas*, and *mucoepidermoid cancers*. These are the next most frequent type of nasal and paranasal sinus cancers.
- *Undifferentiated carcinoma* is another type of cancer that can come from mucosa cells. This is a fast-growing cancer in which the cells look so abnormal that it’s hard to tell what type of cell the cancer started in.
- Cells that give the skin its tan or brown color are called *melanocytes*. These cells give rise to a type of cancer called *melanoma*. This is typically a cancer that can grow and spread quickly. These cancers usually are found on sun-exposed areas of the skin but can form on the lining of the nasal cavity and sinuses or other areas inside the body.
- *Esthesioneuroblastoma* is a cancer that starts in the olfactory nerve (the nerve for the sense of smell). This tumor is also known as *olfactory neuroblastoma*. This type of cancer usually occurs on the roof of the nasal cavity and involves a structure called the *cribriform plate*. The cribriform plate is a bone deep in the skull, between the eyes, and above the ethmoid sinuses. These tumors can sometimes be mistaken for other types of tumors, like undifferentiated carcinoma or *lymphoma*. 
• **Lymphomas** (cancers arising from immune system cells called lymphocytes) can also occur in the nasal cavity and paranasal sinuses. One type of lymphoma seen in this area, T-cell/natural killer cell nasal-type lymphoma, was previously called *lethal midline granuloma*. Information about the diagnosis and treatment of lymphomas can be found in our document [Non-Hodgkin Lymphoma](#).

• **Sarcomas** are cancers of muscle, bone, cartilage, and fibrous cells that can start anywhere in the body, including the nasal cavity and paranasal sinuses. Information about sarcomas can be found in some of our other documents.

Each of these types of cancer has a distinct behavior and outlook. They cannot all be treated the same way. Many of these cancers rarely affect the nasal cavity and paranasal sinuses, so they have been hard to study thoroughly. Because of this, doctors must base treatment decisions on their experience with similar cancers elsewhere in the head and neck area.

### Other growths that can be found in nasal cavity and paranasal sinuses

Some growths in the nasal cavity and paranasal sinuses are not cancers, but they may still cause problems.

**Nasal polyps**

Nasal polyps are abnormal growths inside the nasal cavity or paranasal sinuses. Polyps usually have a teardrop shape and tend to have a smooth surface. Most nasal polyps are benign (non-cancerous) and are caused by some type of chronic inflammation in the nose. Using standard exams and tests, doctors can often tell benign polyps from cancer, but in some cases polyps may need to be evaluated more thoroughly to be sure. Small polyps that cause no symptoms may not need treatment, but larger polyps that cause problems may need to be treated with medicine or surgery.

**Papillomas**

Papillomas are warts that can grow inside the nasal cavity or paranasal sinuses and destroy healthy tissue. They usually have a bumpy surface. Papillomas are not cancer, but sometimes a squamous cell carcinoma will start in a papilloma. Because of the risk of cancer, papillomas in the nasal cavity and paranasal sinuses are removed by surgery.
**Inverting papilloma.** This is a type of papilloma that is officially classified as a benign tumor, but it tends to act more like a cancer. It has a tendency to recur (come back) and can grow into surrounding tissues. The treatment of inverting papilloma often includes the same type of surgery that is used for cancer.

- References

  See all references for Nasal Cavity and Paranasal Sinus Cancers

What Are the Key Statistics About Nasal Cavity and Paranasal Sinus Cancers?

Cancers of the nasal cavity and paranasal sinuses are rare, with about 2,000 people in the United States developing these cancers each year.

These tumors are more common with age, with about 4 out of 5 cases occurring in people who are at least 55 years old.

Men are more likely than women to get these cancers. They occur much more often in certain areas of the world such as Japan and South Africa.

Most cancers of the nasal cavity and paranasal sinuses occur in the maxillary sinuses or in the nasal cavity. They are less common in the ethmoid sinuses, and are rare in the frontal and sphenoid sinuses.

Survival statistics for these cancers are discussed in the section Survival Rates for Nasal Cavity and Paranasal Sinus Cancers, by Stage.

- References

  See all references for Nasal Cavity and Paranasal Sinus Cancers

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What’s New in Nasal Cavity and Paranasal Sinus Cancer Research and Treatment?

There is always research going on in the area of nasal cavity and paranasal sinus cancers. Scientists are looking for ways to prevent nasal cavity and paranasal sinus cancers. Research on better treatment for nasal cavity and paranasal sinus cancers is now being done at many medical centers, university hospitals, and other institutions across the nation. Doctors and patients are urged to contact the nearest cancer center to find out what clinical trials are going on in their community.

Genetics

There are no known inherited tendencies for nasal cavity and paranasal sinus cancer, but scientists are finding some of the changes in the genes in these cancers that occur during the patient’s lifetime. These changes are what transform normal cells into cancer cells.

Understanding these gene changes may help doctors develop better methods of diagnosing this disease as well as treatments that are more effective and have fewer side effects than ones currently available.

For example, researchers have found that many head and neck cancers have mutations (changes) of the tumor suppressor gene TP53. These changes lead to additional mutations of other genes, which make the cells better able to grow and spread. Scientists have tried gene therapies to give good copies of this gene, but so far the results have been disappointing.

Treatment

Surgery

Surgeons are looking at newer ways of removing these cancers while trying to do as
little damage as possible to nearby normal tissues. One example of a newer technique is endoscopic surgery, in which certain tumors can be removed using long, thin instruments passed through the nose. It may be useful only for certain tumors, but if it can be used it may significantly reduce some of the side effects a person has.

**Radiation therapy**

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 nasal cavity and paranasal sinus 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.

Clinical trials are also studying ways to make radiation therapy more effective by using radiosensitizers. These drugs make cancer cells more sensitive to radiation therapy. Other studies are testing radioprotective agents. These drugs protect normal cells from damage by radiation and thereby reduce side effects of radiation therapy. Reducing side effects not only helps people feel better during treatment, but may also help people tolerate higher radiation doses that can kill more cancer cells.

**Targeted therapies**

Clinical trials are studying several targeted therapies that block the action of the substances (such as growth factors and growth factor receptors) that cause head and neck cancers to grow and spread. Some of the drugs being studied include erlotinib, sunitinib, sorafenib, lapatinib, and nimotuzumab. Many of these studies are testing combinations of targeted therapies plus chemo or radiation.

Because nasal cavity and paranasal sinus cancers are rare, nearly all of these clinical trials include patients with other types of head and neck cancer as well. Although these studies are not specific to nasal cavity and paranasal sinus cancers, doctors will be able to apply their results to choosing treatment for patients with nasal cavity and paranasal sinus cancers.

- References

See all references for Nasal Cavity and Paranasal Sinus Cancers

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