



Head and Neck Cancer

Head and neck cancer is a group of cancers that start in the oral cavity, larynx, pharynx, salivary glands, nasal cavity or paranasal sinuses. They usually begin in the squamous cells inside the mouth, nose and throat and are often identified as squamous cell carcinoma. Typical symptoms include a persistent sore throat, difficulty swallowing, mouth sores that won't heal, and a hoarse voice.



Your doctor will likely perform a physical exam to evaluate your condition. To confirm a diagnosis of cancer and determine if it has spread, you may undergo endoscopy, head MRI, CT of the sinuses, head CT, panoramic dental x-ray, dental cone beam CT, PET/CT or chest imaging. If none of these tests are suspicious for cancer, no further action may be needed. However, your doctor may want to monitor your condition if your symptoms persist. If an abnormality is found but tests do not confirm it is benign, your doctor may order a biopsy. Treatment for head and neck cancer depends on its size, type, location, growth rate and your general health. Options include radiation therapy, surgery, chemotherapy or a combination thereof.

What is head and neck cancer?

Head and neck cancer is a group of cancers that start in the oral cavity, larynx, pharynx, salivary glands, nasal cavity and paranasal sinuses. These cancers are grouped together due to their close proximity and because head and neck surgeons (also known as otolaryngologists or ENT physicians) are almost always members of the oncology team managing patients with these diseases. They most commonly begin in the squamous cells inside the mouth, nose and throat and are often identified as squamous cell carcinoma (though other types of cancers can arise in the head and neck).

Risk factors for head and neck cancer include:

- Age
- Gender
- Alcohol and tobacco use
- Radiation or asbestos exposure
- Poor oral hygiene

- Ethnicity, especially of Asian descent (nasopharynx cancer)
- Human papilloma virus (HPV)

Head and neck cancer is more likely to happen in adults over the age of 50 and is twice as likely to occur in men.

Typical symptoms of head and neck cancer often include a persistent sore throat, difficulty swallowing, a mouth sore that will not heal and hoarseness of the voice. Other symptoms are dependent on the location of the cancer, but often may include:

- Unexplained bleeding in the mouth
- Red or white patches in the mouth
- Swelling of the jaw
- Difficulty opening the mouth
- Ear pain
- Pain when swallowing
- Difficulty breathing and/or speaking
- Frequent headaches
- Chronic sinus infections
- Teeth pain, sore gums, loose teeth
- Unexplained bleeding of the nose
- Facial numbness or paralysis
- Hearing loss
- Painless mass in the neck

How is head and neck cancer diagnosed and evaluated?

Your primary doctor will begin by asking you about your medical history, risk factors and symptoms. You will also undergo a physical exam.

Your doctor may have one or more of the following imaging tests performed to help determine if you have a cancer and whether it has spread:

- **Endoscopy:** This imaging test uses a flexible illuminated optical instrument, called an endoscope, to visualize the interior of the body and its organs. With the aid of topical anesthesia, the tube is inserted into the mouth or nose to take pictures and evaluate the abnormal cells.
- **Head MRI:** During head MRI, a powerful magnetic field, radio frequency pulses and a computer will be used to produce detailed pictures of the inside of the head and neck. Currently, MRI is the most sensitive imaging test of the head in routine clinical practice.
- **CT of the Sinuses:** This diagnostic medical test produces multiple images or pictures of a patient's paranasal sinus cavities. The cross-sectional images generated during a CT scan can be reformatted in multiple planes, and can even generate three-dimensional (3-D) images. It is primarily used to detect cancers of the sinuses and nasal cavities and plan for surgeries.
- **CT of the Head:** Much like CT of the sinuses, CT of the head can help detect abnormalities of the

paranasal sinuses and nasal cavity.

- **Panoramic Dental X-ray:** Also called panoramic radiography, is a two-dimensional (2-D) dental x-ray examination that captures the entire mouth in a single image, including the teeth, upper and lower jaws, surrounding structures and tissues. It can help reveal the presence of oral cancers.
- **Dental Cone Beam CT:** This type of CT scanner uses special technology to generate three dimensional (3-D) images of dental structures, soft tissues, nerve paths and bone in the craniofacial region in a single scan. Images obtained with cone beam CT allow for more precise treatment planning. It is useful for evaluating the jaw, sinuses, nerve canals and nasal cavities.
- **PET/CT:** This type of nuclear medicine imaging combines PET scans and CT scans to provide images that pinpoint the anatomic location of abnormal metabolic activity within the head and neck. It can detect head and neck cancer, determine if it has spread, assess the effectiveness of a treatment plan and determine if the cancer has returned after treatment.
- **Chest imaging:** The most common place for head and neck cancer to spread to is the lungs. Also, patients with head and neck cancer (especially if they are/were smokers) can have a separate lung cancer unrelated to the head and neck cancer. Your doctor may order a simple chest x-ray or CT scan of the chest to investigate.

If these tests are not suspicious for a cancer, no further steps may be needed. Your doctor may want to monitor the area during future visits.

If these tests do not clearly show that an abnormality is benign, a biopsy may be necessary. A biopsy is the removal of tissue in order to examine it for disease. Biopsies are performed in several different ways. Some biopsies involve removing a small amount of tissue with a needle while others involve surgically removing an entire lump, or nodule, that is suspicious.

Often, the tissue is removed by placing a needle through the skin to the area of abnormality. This is often called a fine needle aspiration (FNA). Biopsies can be safely performed with image guidance such as ultrasound, x-ray, computed tomography (CT), or magnetic resonance imaging (MRI).

How is head and neck cancer treated?

The type of treatment recommended depends on the location, size and type of the cancer, its growth rate and the general health of the patient.

The three main types of treatment for managing head and neck cancer are radiation therapy, surgery and chemotherapy. The optimal combination of the three treatment modalities for a patient with a particular head and neck cancer depends on the site of the cancer and the stage (extent) of the disease.

The primary treatments are radiation therapy or surgery, or both combined; chemotherapy is often used as an additional, or adjuvant, treatment. Chemotherapy is also used if the cancer has spread beyond the head and neck. This is uncommon for head and neck cancer.

In general, patients with early-stage head and neck cancers (small cancers, limited to the site of origin)

are treated with one modality—either radiation therapy or surgery. Patients who have more extensive cancers are often treated with multiple therapies; concurrent chemotherapy and radiation therapy, surgery and radiation, or even all three treatments. Sometimes, depending on the clinical scenario, patients are treated with surgery followed by postoperative radiation therapy (with or without concurrent chemotherapy).

In general, if surgical removal of the primary tumor is indicated, radiation is given afterward if necessary. Sometimes, however, the cancer is extensive or it is not feasible to completely remove the cancer initially. Radiotherapy is then given first to try to shrink the tumor, and surgery will follow radiotherapy.

Cancers of the head and neck frequently spread to the lymph nodes in the neck. Therefore, surgery and/or radiation often treat these nodes in the neck in addition to the primary site of the cancer. The surgery is called a neck dissection and if recommended is usually done at the same time as the surgery on the primary site.

If the plan of treatment involves radiation therapy for the primary cancer, the neck is often treated with radiation therapy. In addition, a neck dissection to remove lymph nodes in the neck may be recommended.

Recent studies indicate that chemotherapy given at the same time as radiation therapy is more effective than if it is given before a course of radiation therapy. Therefore, radiation treatment schedules sometimes include chemotherapy if the stage of the cancer is advanced (advanced stage III or stage IV). Drugs most commonly given in conjunction with radiation therapy are cisplatin (Platinol) and Cetuximab (Erbix). Occasionally, other drugs may include fluorouracil (5-FU, Adrucil), carboplatin (Paraplatin), paclitaxel (Taxol), and docetaxol (Taxotere). This is only a partial list of chemotherapy agents; your physicians may choose to use others. The chemotherapy may be given in a variety of ways, including a low daily dose, a moderately low weekly dose, or a relatively higher dose every three to four weeks.

Typically, one of the following radiation therapy procedures may be used to treat head and neck cancer:

- **External beam therapy (EBT):** a method for delivering a beam of high-energy x-rays or proton beams to the location of the tumor. The radiation beam is generated outside the patient (usually by a linear accelerator for photon/x-ray and a cyclotron or synchrotron for proton beam) and is targeted at the tumor site. These radiation beams can destroy the cancer cells, and conformal treatment plans allow the surrounding normal tissues to be spared. See the External Beam Therapy page for more information.
- **Intensity-modulated radiation therapy (IMRT):** an advanced mode of high-precision radiotherapy that utilizes computer-controlled x-ray accelerators to deliver precise radiation doses to a malignant tumor or specific areas within the tumor. The radiation dose is designed to conform to the three-dimensional (3-D) shape of the tumor by modulating—or controlling—the intensity of the radiation beam to focus a higher radiation dose to the tumor while minimizing radiation exposure to healthy cells. See the IMRT page (www.RadiologyInfo.org/en/info.cfm?pg=imrt) for more information.

See the Head and Neck Cancer Treatment page for more information.

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