Laryngeal Cancer Treatment
General Information about Laryngeal Cancer

Laryngeal cancer is a disease in which cancer cells form in the tissues of the larynx (voice box)

The larynx is a part of the throat, between the back part of the tongue and the trachea. The larynx contains the vocal cords, which vibrate and make sound when air is directed against them. The sound echoes through the pharynx, mouth, and nose to make a person's voice. There are three main parts of the larynx:

- Supraglottis: The upper part of the larynx above the vocal cords, including the epiglottis.
- Glottis: The middle part of the larynx where the vocal cords are located.
- Subglottis: The lower part of the larynx between the vocal cords and the trachea (windpipe).
Laryngeal Cancer Treatment

Patient Information Provided by Cancer.Gov
Laryngeal cancer forms in the tissues of the larynx (area of the throat that contains the vocal cords). The larynx includes the supraglottis, glottis (vocal cords), and subglottis. The cancer may spread to nearby tissues or to the thyroid, trachea, or esophagus. It may also spread to the lymph nodes in the neck, around the carotid artery, into the jugular vein, the upper part of the spinal column, the chest, and to other parts of the body.
Most laryngeal cancers form in squamous cells, the thin, flat cells lining the inside of the larynx.

Laryngeal cancer is a type of head and neck cancer.

**Use of tobacco products and drinking too much alcohol can increase the risk for laryngeal cancer.**

 Anything that increases your risk of getting a disease is called a risk factor. Having a risk factor does not mean that you will get cancer; not having risk factors doesn't mean that you will not get cancer. Talk with your doctor if you think you may be at risk.

**Signs and symptoms of laryngeal cancer include a sore throat and ear pain.**

These and other signs and symptoms may be caused by laryngeal cancer or by other conditions. Check with your doctor if you have any of the following:

- A sore throat or cough that does not go away.
- Trouble or pain when swallowing.
- Ear pain that is typically constant, and often on one side.
- A lump in the neck or throat.
- A change or hoarseness in the voice that is present for more than 2 weeks.
Tests that examine the throat and neck are used to find, diagnose, and stage laryngeal cancer.

The following tests and procedures may be used:

- **Physical exam of the throat and neck:** An exam to check the throat and neck for abnormal areas. The doctor will feel the inside of the mouth with a gloved finger and examine the mouth and throat with a small long-handled mirror and light. This will include checking the insides of the cheeks and lips; the gums; the back, roof, and floor of the mouth; the top, bottom, and sides of the tongue; and the throat. The neck will be felt for swollen lymph nodes. A history of the patient’s health habits and past illnesses and medical treatments will also be taken.

- **Biopsy:** The removal of cells or tissues so they can be viewed under a microscope by a pathologist to check for signs of cancer. The sample of tissue may be removed during one of the following procedures:
  - **Laryngoscopy:** A procedure in which the doctor checks the voice box with a mirror or a laryngoscope to check for abnormal areas. A laryngoscope is a thin, tube-like instrument with a light and a lens for viewing the inside of the throat and voice box. It may also have a tool to remove tissue samples, which are checked under a microscope for signs of cancer. This is most often completed in the clinic.
  - **Endoscopy:** A procedure to look at organs and tissues inside the body, such as the throat, esophagus, and trachea to check for abnormal areas. An endoscope (a thin, lighted tube with a light and a lens for viewing) is inserted through an opening in the body, such as the mouth. A special tool on
the endoscope may be used to remove samples of tissue. This is completed in the operating room.

- **CT scan (CAT scan):** A procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called computed tomography, computerized tomography, or computerized axial tomography.

Computed tomography (CT) scan of the head and neck. The patient lies on a table that slides through the CT scanner, which takes x-ray pictures of the inside of the head and neck.
• MRI (magnetic resonance imaging): A procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. This procedure is also called nuclear magnetic resonance imaging (NMRI).

• PET scan (positron emission tomography scan): A procedure to find malignant tumor cells in the body. A small amount of radioactive glucose (sugar) is injected into a vein. The PET scanner rotates around the body and makes a picture of where glucose is being used in the body. Malignant tumor cells show up brighter in the picture because they are more active and take up more glucose than normal cells do.

• PET-CT scan: A procedure that combines the pictures from a positron emission tomography (PET) scan and a computed tomography (CT) scan. The PET and CT scans are done at the same time with the same machine. The combined scans give more detailed pictures of areas inside the body than either scan gives by itself. A PET-CT scan may be used to help diagnose disease, such as cancer, plan treatment, or find out how well treatment is working.

• Bone scan: A procedure to check if there are rapidly dividing cells, such as cancer cells, in the bone. A very small amount of radioactive material is injected into a vein and travels through the bloodstream. The radioactive material collects in the bones with cancer and is detected by a scanner.

• Barium swallow: A series of x-rays of the esophagus and stomach. The patient drinks a liquid that contains barium (a silver-white metallic compound). The liquid coats the esophagus and stomach, and x-rays are taken. This procedure is also called an upper GI series.
Certain factors affect chance of recovery and treatment options.

Prognosis (chance of recovery) depends on the following:

- The stage of the cancer
- The location and size of the tumor.
- The grade of the tumor.
- The patient's age, gender, and general health, including whether the patient is anemic (low blood count), malnourished, and/or diabetic with poor control of blood sugar.

Treatment options depend on the following:

- The stage of the disease.
- The location and size of the tumor.
- Keeping the patient's ability to talk, eat, and breathe as normal as possible.
- Whether the cancer has come back (recurred) after a previous treatment.

Smoking tobacco and drinking alcohol decrease the effectiveness of treatment for laryngeal cancer. Patients with laryngeal cancer who continue to smoke and drink are less likely to be cured and more likely to develop a second tumor. After treatment for laryngeal cancer, frequent and careful follow-up is important.
Stages of Laryngeal Cancer

After laryngeal cancer has been diagnosed, tests are done to find out if cancer cells have spread within the larynx or to other parts of the body.

The process used to find out if cancer has spread within larynx or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment. The results of the tests used to diagnose laryngeal cancer are also used to stage the disease.

There are three ways that cancer spreads in the body.

Cancer can spread through tissue, the lymph system, and the blood:

- **Tissue.** The cancer spreads from where it began by growing into nearby areas.

- **Lymph system.** The cancer spreads from where it began by getting into the lymph system. The cancer travels through the lymph vessels to other parts of the body. This may result in lymph node deposits in the neck forming a neck mass.

- **Blood.** The cancer spreads from where it began by getting into the blood. The cancer travels through the blood vessels to other parts of the body. This may result in cancer deposits in other parts of the body such as bone or the liver.
Cancer may spread from where it began to other parts of the body.

When cancer spreads to another part of the body, it is called metastasis. Cancer cells break away from where they began (the primary tumor) and travel through the lymph system or blood.

- **Lymph system.** The cancer gets into the lymph system, travels through the lymph vessels, and forms a tumor (metastatic tumor) in another part of the body.

- **Blood.** The cancer gets into the blood, travels through the blood vessels, and forms a tumor (metastatic tumor) in another part of the body.

The metastatic tumor is the same type of cancer as the primary tumor. For example, if laryngeal cancer spreads to the lung, the cancer cells in the lung are actually laryngeal cancer cells. The disease is metastatic laryngeal cancer, not lung cancer.

**The following stages are used for laryngeal cancer:**

**Stage 0 (Carcinoma in Situ)**

In stage 0, abnormal cells are found in the lining of the larynx. These abnormal cells may become cancer and spread into nearby normal tissue. Stage 0 is also called carcinoma in situ. There is no evidence that these abnormal cells are invasive yet.
Stage I

In stage I, cancer has formed in the supraglottis, glottis, or subglottis area of the larynx:

- **Supraglottis**: Cancer is in one area of the supraglottis and the vocal cords work normally.
- **Glottis**: Cancer is in one or both vocal cords and the vocal cords work normally.
- **Subglottis**: Cancer is in the subglottis only. In stage I, cancer has formed. The tumor is 2 centimeters or smaller and the deepest point of tumor invasion is 5 millimeters or less.
- There is no evidence cancer has spread to the lymph nodes or elsewhere in the body.

Stage II

In stage II, cancer has formed in the supraglottis, glottis, or subglottis area of the larynx:

- **Supraglottis**: Cancer is in more than one area of the supraglottis or has spread to the area at the base of the tongue or to tissues near the vocal cords. The vocal cords work normally.
- **Glottis**: Cancer has spread to the supraglottis, subglottis, or both, and/or the vocal cords do not work normally.
- **Subglottis**: Cancer has spread to one or both vocal cords and the vocal cords may not work normally.
- There is no evidence cancer has spread to the lymph nodes or elsewhere in the body.
Stage III

In stage III, cancer has formed in the supraglottis, glottis, or subglottis area of the larynx:

In stage III cancer of the supraglottis:

- cancer is in the larynx only and the vocal cords do not work, and/or cancer has spread near or through the inner part of the thyroid cartilage, and/or may have spread to a potential space around the larynx. Cancer may have also spread to one lymph node on the same side of the neck as the primary tumor and the lymph node is 3 centimeters or smaller; or

- cancer is in one area of the supraglottis and the vocal cords work normally. Cancer has spread to one lymph node on the same side of the neck as the primary tumor and the lymph node is 3 centimeters or smaller; or

- cancer is in more than one area of the supraglottis or has spread to the area at the base of the tongue or to tissues near the vocal cords. The vocal cords work normally. Cancer has also spread to one lymph node on the same side of the neck as the primary tumor and the lymph node is 3 centimeters or smaller.

In stage III cancer of the glottis:

- cancer is in the larynx only and the vocal cords do not work, and/or cancer has spread near or through the inner part of the thyroid cartilage, and/or may have spread to a potential space around the larynx. Cancer may have also spread to one lymph node on the same side of the neck as the primary tumor and the lymph node is 3 centimeters or smaller; or
- cancer is in one or both vocal cords and the vocal cords work normally. Cancer has spread to one lymph node on the same side of the neck as the primary tumor and the lymph node is 3 centimeters or smaller; or

- cancer has spread to the supraglottis, subglottis, or both, and/or the vocal cords do not work normally. Cancer has also spread to one lymph node on the same side of the neck as the primary tumor and the lymph node is 3 centimeters or smaller.

In stage III cancer of the subglottis:

- cancer is in the larynx only and the vocal cords do not work, and/or cancer has spread near or through the inner part of the thyroid cartilage. Cancer may have also spread to one lymph node on the same side of the neck as the primary tumor and the lymph node is 3 centimeters or smaller; or

- cancer is in the subglottis only. Cancer has spread to one lymph node on the same side of the neck as the primary tumor and the lymph node is 3 centimeters or smaller; or

- cancer has spread to one or both vocal cords and the vocal cords may not work normally. Cancer has also spread to one lymph node on the same side of the neck as the primary tumor and the lymph node is 3 centimeters or smaller.

**Stage IV**

Stage IV is the most advanced stage.
Treatment Options Overview

Three types of standard treatment are used:

**Surgery** is a common treatment for all stages of laryngeal cancer. The following surgical procedures may be used and depends on the stage:

- **Cordectomy**: Surgery to remove the vocal cords only.
- **Supraglottic laryngectomy**: Surgery to remove the supraglottis only.
- **Hemilaryngectomy**: Surgery to remove half of the larynx (voice box). A hemilaryngectomy saves the voice.
- **Partial laryngectomy**: Surgery to remove part of the larynx (voice box). A partial laryngectomy helps keep the patient’s ability to talk.
- **Total laryngectomy**: Surgery to remove the whole larynx. During this operation, a hole is made in the front of the neck to allow the patient to breathe. This is called a laryngeal stoma.
- **Thyroidectomy**: The removal of all or part of the thyroid gland.
- **Laser surgery**: A surgical procedure that uses a laser beam (a narrow beam of intense light) as a knife to make bloodless cuts in tissue or to remove a surface lesion such as a tumor in the larynx.

After the doctor removes all the cancer that can be seen at the time of the surgery, some patients may be given chemotherapy or
radiation therapy after surgery. Treatment given after the surgery, to lower the risk that the cancer will come back, is called adjuvant therapy.

**Radiation therapy** is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells or keep them from growing. There are two types of radiation therapy:

- External radiation therapy uses a machine outside the body to send radiation toward the cancer.
- Internal radiation therapy uses a radioactive substance sealed in needles, seeds, wires, or catheters that are placed directly into or near the cancer.

The way the radiation therapy is given depends on the type and stage of the cancer being treated. External radiation therapy is used to treat laryngeal cancer.

Radiation therapy works better in patients who have stopped smoking before beginning treatment. External radiation therapy to the thyroid or the pituitary gland may change the way the thyroid gland works. A blood test to check the thyroid hormone level in the body may be done before and after therapy to make sure the thyroid gland is working properly.

**Hyperfractionated radiation therapy** may be used to treat laryngeal cancer. Hyperfractionated radiation therapy is radiation treatment in which a smaller than usual total daily dose of radiation is divided into two doses and the treatments are given twice a day. Hyperfractionated radiation therapy is given over the same period of time (days or weeks) as standard radiation therapy. New types of radiation therapy are being studied in the treatment of laryngeal cancer.
External-beam radiation therapy of the head and neck. A machine is used to aim high-energy radiation at the cancer. The machine can rotate around the patient, delivering radiation from many different angles to provide highly conformal treatment. A mesh mask helps keep the patient’s head and neck from moving during treatment. Small ink marks are put on the mask. The ink marks are used to line up the radiation machine in the same position before each treatment.
Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping the cells from dividing. When chemotherapy is taken by mouth or injected into a vein or muscle, the drugs enter the bloodstream and can reach cancer cells throughout the body (systemic chemotherapy). When chemotherapy is placed directly into the cerebrospinal fluid, an organ, or a body cavity such as the abdomen, the drugs mainly affect cancer cells in those areas (regional chemotherapy). The way the chemotherapy is given depends on the type and stage of the cancer being treated.

For laryngeal cancer, chemotherapy alone will not achieve cure of the disease; chemotherapy is given at the same time as radiation with the intent to cure.