About Esophagus Cancer

Overview and Types

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

- What Is Cancer of the Esophagus?

Research and Statistics

See the latest estimates for new cases of esophagus cancer and deaths in the US and what research is currently being done.

- Key Statistics for Esophageal Cancer
- What's New in Esophageal Cancer Research?

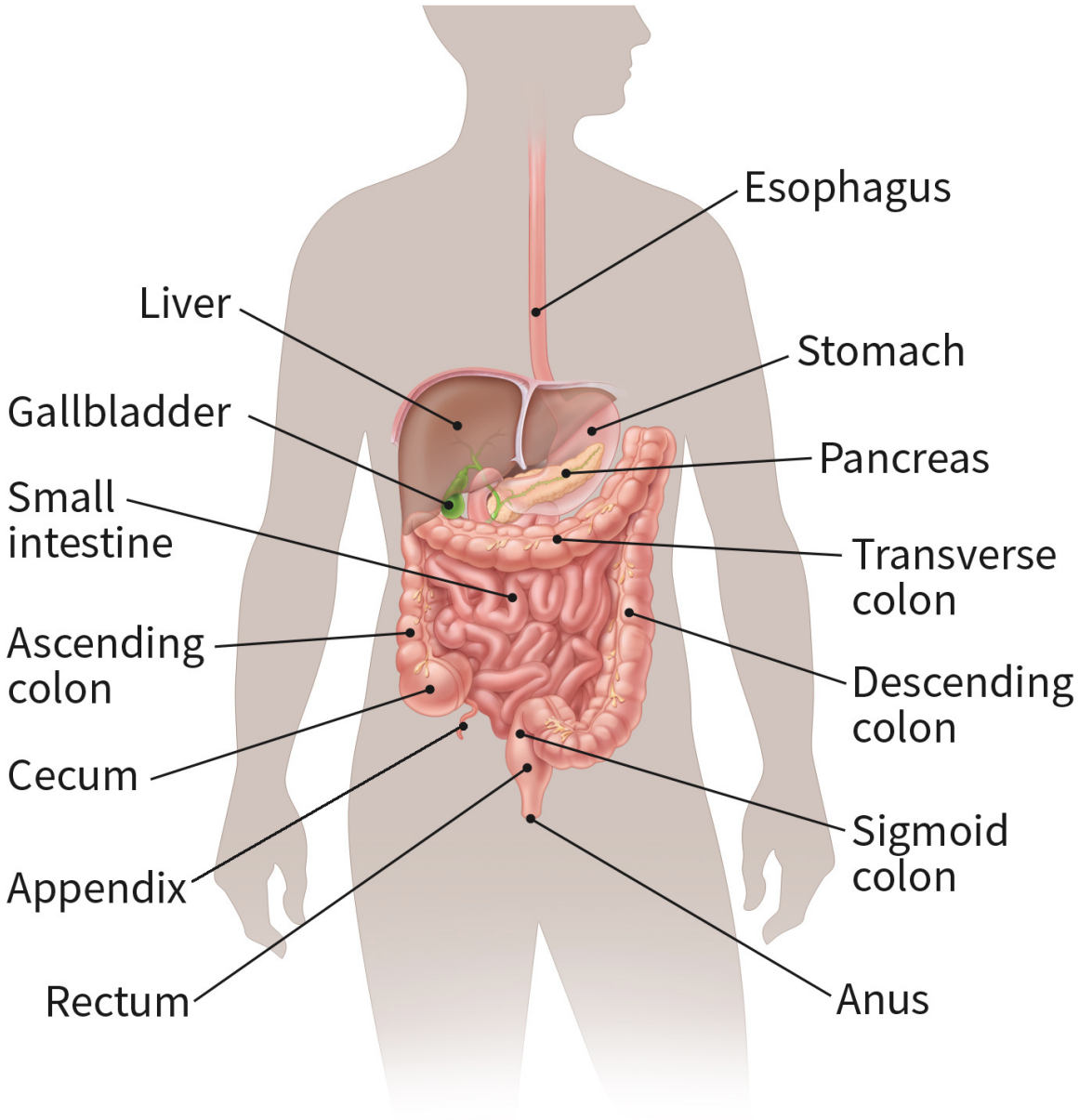
What Is Cancer of the Esophagus?

Cancer of the esophagus (also called *esophageal cancer*) starts when cells in the lining of the esophagus begin to grow out of control. Cells in nearly any part of the body can become cancer, and can spread to other areas of the body. To learn more about how cancers start and spread, see What Is Cancer?[1]

To understand esophagus cancer, it helps to know about the normal structure and function of the esophagus.

The esophagus

The esophagus is a hollow, muscular tube that connects the throat to the stomach. It lies behind the trachea (windpipe) and in front of the spine. In adults, the esophagus is usually between 10 and 13 inches (25 to 33 centimeters [cm]) long and is about ¾ of an inch (2cm) across at its smallest point.



At the opening of the upper esophagus there is a special ring of muscle (called the *upper esophageal sphincter)* that relaxes to open the esophagus when it senses food or

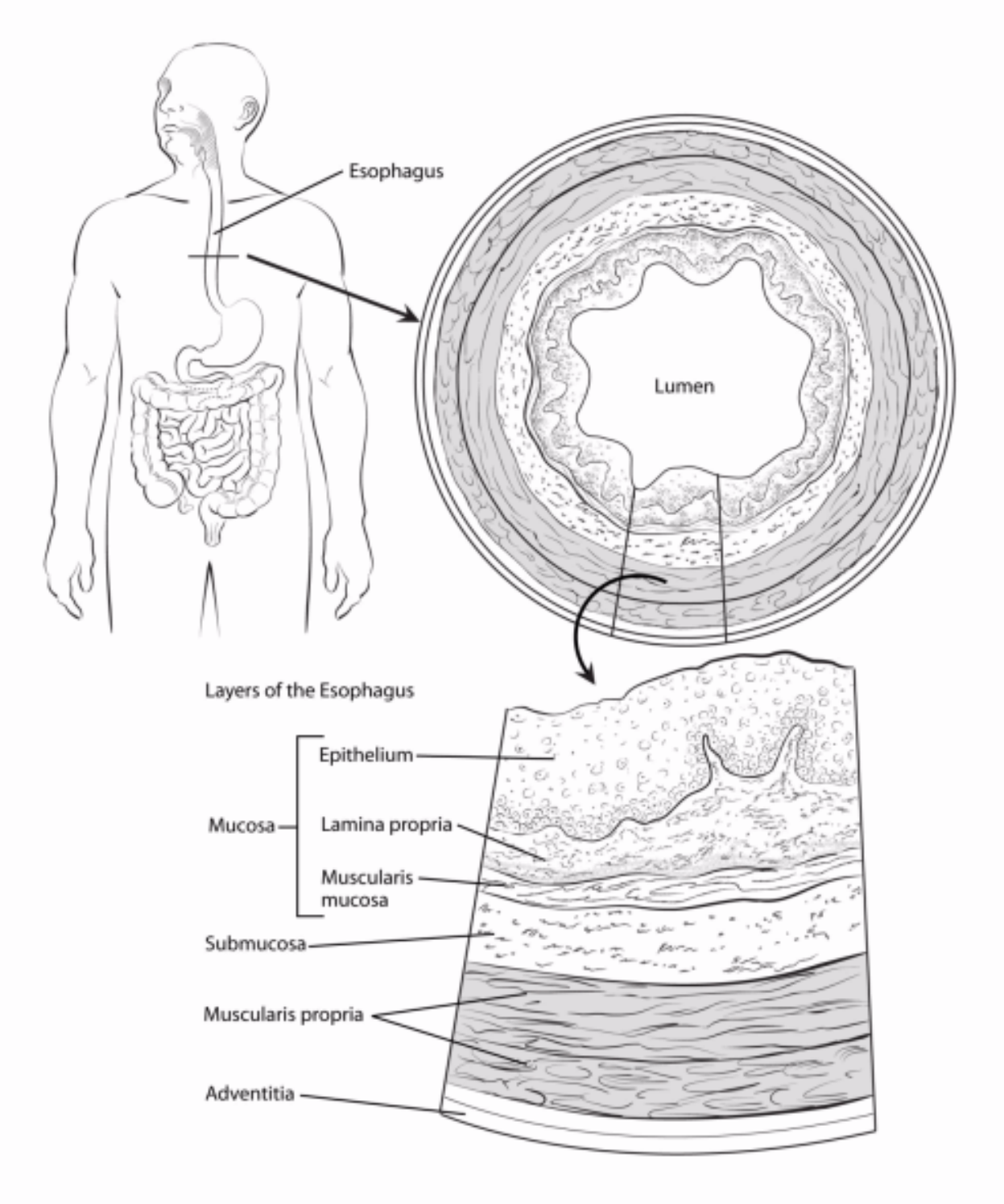
liquid coming toward it.

When you swallow, food and liquids travel through the inside of the esophagus (called the *lumen*) to reach the stomach.

The lower part of the esophagus that connects to the stomach is called the *gastroesophageal (GE) junction*. A special ring of muscle near the GE junction, called the *lower esophageal sphincter*, controls the movement of food from the esophagus into the stomach. Between meals, it closes to keep the stomach's acid and digestive juices out of the esophagus.

Where esophageal cancer starts

Esophageal cancer can start anywhere along the esophagus. It starts in the inner layer of the esophagus wall (see below), and grows outward through the other layers.



The esophagus wall

The wall of the esophagus has several layers:

Mucosa: This layer lines the inside of the esophagus. It has 3 parts:

- The *epithelium* is the innermost lining of the esophagus and is normally made up of flat, thin cells called *squamous cells*. **This is where most cancers of the esophagus start.**
- The *lamina propria* is a thin layer of connective tissue right under the epithelium.
- The *muscularis mucosa* is a very thin layer of muscle under the lamina propria.

Submucosa: This is a layer of connective tissue just below the mucosa that contains blood vessels and nerves. In some parts of the esophagus, this layer also includes glands that secrete mucus.

Muscularis propria: This is a thick layer of muscle under the submucosa. It contracts in a coordinated way to push food down the esophagus from the throat to the stomach.

Adventitia: This is the outermost layer of the esophagus, and is formed by connective tissue.

Types of esophageal cancer

There are 2 main types of esophageal cancer, based on the type of cell it starts in.

Squamous cellcarcinoma

The inner layer of the esophagus (the mucosa) is normally lined with squamous cells. Cancer starting in these cells is called *squamous cell carcinoma*. This type of cancer can occur anywhere along the esophagus, but is most common in the neck region (*cervical esophagus*) and in the upper two-thirds of the chest cavity (*upper* and *middle thoracic esophagus*). Squamous cell carcinoma used to be the most common type of esophageal cancer in the United States. This has changed over time, and now it makes up less than 30% of esophageal cancers in this country.

Adenocarcinoma

Cancers that start in gland cells (cells that make mucus) are called *adenocarcinomas*.Adenocarcinomas are often found in the lower third of the esophagus (lower thoracic esophagus). In some conditions, such as Barrett's esophagus[2], gland cells begin to replace the squamous cells in the lower part of the esophagus, and this

might lead to adenocarcinoma.

Gastroesophageal (GE) junction tumors

Adenocarcinomas that start at the area where the esophagus joins the stomach (the GE junction, which includes about the first 2 inches (5 cm) of the stomach), tend to behave like cancers in the esophagus and are treated like them, as well.

Rare cancers in the esophagus

Other types of cancer can also start in the esophagus, including lymphomas[3], melanomas[4], and sarcomas[5]. But these cancers are rare and are not discussed further here.

Hyperlinks

1. www.cancer.org/treatment/understanding-your-diagnosis/what-is-cancer.html
2. www.cancer.org/cancer/esophagus-cancer/causes-risks-prevention/risk-factors.html
3. www.cancer.org/cancer/lymphoma.html
4. www.cancer.org/cancer/melanoma-skin-cancer.html
5. www.cancer.org/cancer/soft-tissue-sarcoma.html

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Last Revised: March 20, 2020

Key Statistics for Esophageal Cancer

The American Cancer Society's estimates for esophageal cancer in the United States for 2022 are:

- About 20,640 new esophageal cancer cases diagnosed (16,510 in men and 4,130 in women)
- About 16,410 deaths from esophageal cancer (13,250 in men and 3,160 in women)

Esophageal cancer is more common among men than among women. The lifetime risk of esophageal cancer in the United States is about 1 in 125 in men and about 1 in 417 in women. (See Esophageal Cancer Risk Factors[1] to learn about factors that can affect these chances.)

Overall, the rates of esophageal cancer in the United States have been fairly stable for many years, but over the past decade they have been decreasing slightly. It is most common in whites. Adenocarcinoma is the most common type of cancer of the esophagus among whites, while squamous cell carcinoma is more common in African

Americans. American Indian/Alaska Natives and Hispanics have lower rates of esophageal cancer, followed by Asians/Pacific Islanders.

Esophageal cancer makes up about 1% of all cancers diagnosed in the United States, but it is much more common in some other parts of the world, such as Iran, northern China, India, and southern Africa.

Although many people with esophageal cancer will go on to die from this disease, treatment has improved and survival rates are getting better. During the 1960s and 1970s, only about 5% of patients survived at least 5 years after being diagnosed. Now, about 20% of patients survive at least 5 years after diagnosis. This number includes patients with all stages[2] of esophageal cancer. Survival rates for people with early stage cancer are higher. For more information on survival, see Survival Rates for Cancer of the Esophagus by Stage[3].

Visit the American Cancer Society's Cancer Statistics Center[4] for more key statistics.

Hyperlinks

1. www.cancer.org/cancer/esophagus-cancer/causes-risks-prevention/risk-factors.html
2. www.cancer.org/cancer/esophagus-cancer/detection-diagnosis-staging/staging.html
3. www.cancer.org/cancer/esophagus-cancer/detection-diagnosis-staging/survival-rates.html
4. cancerstatisticscenter.cancer.org/

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American Cancer Society. *Facts & Figures 2022*. American Cancer Society. Atlanta, Ga. 2022.

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Last Revised: January 12, 2022

What's New in Esophageal Cancer Research?

Research into the causes, prevention, and treatment of esophageal cancer is now being done at many medical centers, university hospitals, and other institutions around the world.

Genetics

Researchers have found 4 inherited syndromes that raise the risk of esophageal cancer. They have found specific genes related to 3 of these syndromes, and more research is being done. Researchers hope to find additional genes and to come up with more detailed recommendations for screening to find esophageal cancer early in people at high risk because of these syndromes.

Tests

Liquid biopsy

Researchers are studying liquid biopsies for cancer screening, diagnosis, and treatment. Most liquid biopsies are done using a sample of blood, but samples of urine, spinal fluid, or pleural effusions (fluid around the lungs) can also be used. It is much easier to get a sample of blood for testing than to get a sample of the tumor with a needle, and studies have shown that liquid biopsies do contain tumor cells as well as pieces of DNA from the tumor.

Current research is testing esophageal cancer DNA from liquid biopsies to find specific mutations. Researchers are hoping to find out if the gene changes could help doctors choose the best drugs for patients. Studies are also looking at whether the liquid biopsy tumor DNA can help predict how the tumor might respond to certain drugs, or how likely it might be to come back after treatment.

Imaging tests

Currently, people with esophageal cancer who get chemo or chemoradiation before surgery (neoadjuvant treatment) will have another imaging test after treatment to find out whether the tumor has gotten small enough to do surgery. Researchers are studying if a PET scan can help doctors decide the next step in treatment. For example, should

people who were treated with neoadjuvant chemotherapy whose PET scans still show signs of cancer be treated with radiation therapy or a different chemotherapy to try and shrink the cancer more before getting surgery?

Treatment

Chemotherapy

Many studies are testing what the best order of treatment is for esophageal cancer. Around the world, different combinations of treatment are used. Studies are looking to see if one combination is better than the other. For example, is chemotherapy better than chemoradiation? Is chemotherapy or chemoradiation better if given before surgery or after surgery? Do certain chemo drugs work better with radiation than others to shrink the tumor?

Immunotherapy and Targeted Therapy

Immunotherapy drugs known as **checkpoint inhibitors** are useful in some other cancers and are now coming into use for esophageal cancer. For example, the drug pembrolizumab (Keytruda) is approved to treat some advanced cancers of the esophagus and gastroesophageal junction. Targeted therapy with drugs such as trastuzumab and ramucirumab is also approved for treatment of advanced esophageal cancer.

There are studies now looking at using immunotherapy or targeted therapy drugs with or without chemotherapy before or after surgery in patients with potentially curable cancers to see if tumors will shrink more or have less of a chance of coming back.

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Last Revised: March 20, 2020

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