



[cancer.org](https://www.cancer.org) | 1.800.227.2345

---

# 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 starts when cells in the body 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?](#)<sup>1</sup>

## How the esophagus works

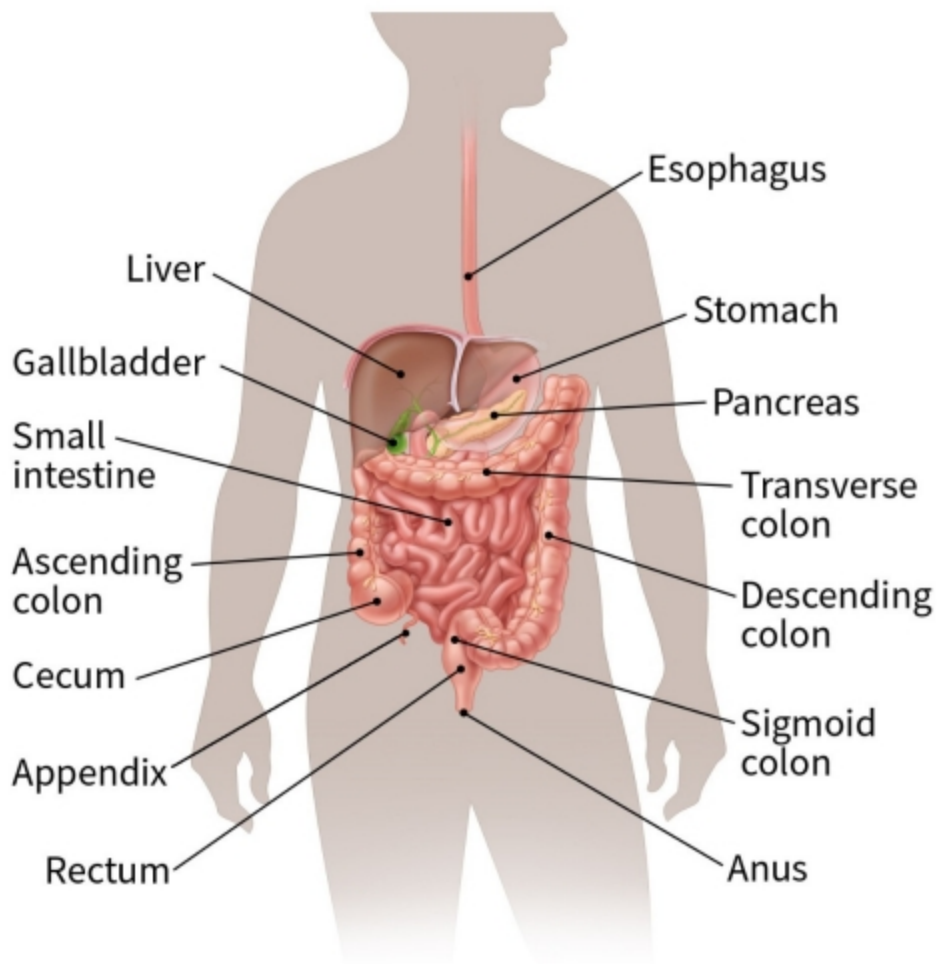
To understand esophagus cancer, it helps to know about the normal structure and function of the esophagus.

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.

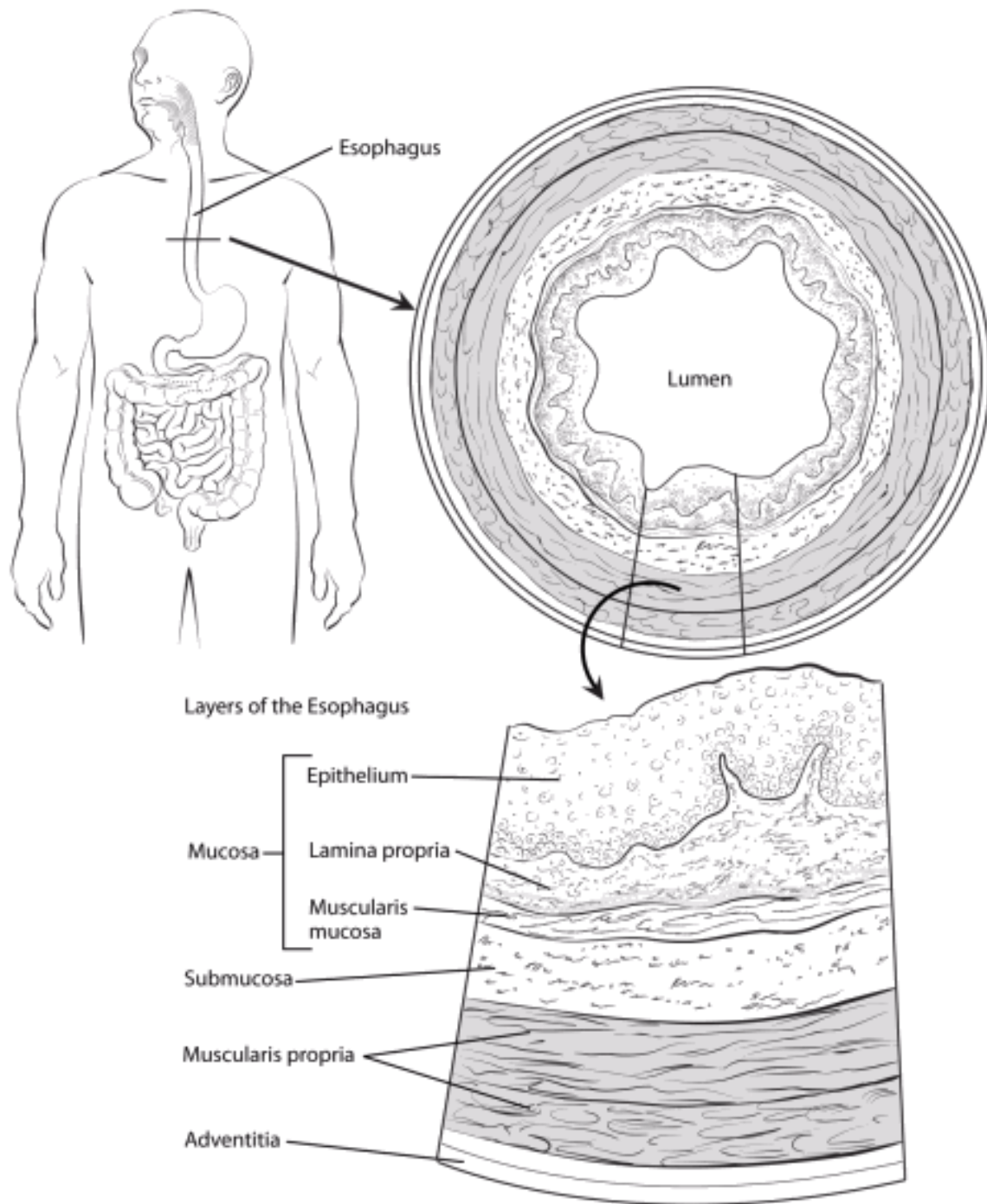
Food and liquids that are swallowed travel through the inside of the esophagus (called the *lumen*) to reach the stomach. In adults, the esophagus is usually between 10 and 13 inches (25 to 33 centimeters [cm]) long and is about  $\frac{3}{4}$  of an inch (2cm) across at its smallest point.

The upper part of the esophagus has a special ring of muscle at its beginning that relaxes to open the esophagus when it senses food or liquid coming toward it. This muscle is called the *upper esophageal sphincter*.

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.



The wall of the esophagus has several layers. These layers are important for understanding where cancers in the esophagus usually start and how they can grow.



**Mucosa:** This layer lines the inside of the esophagus. The mucosa 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.

## Esophageal cancer

Cancer of the esophagus (also called *esophageal cancer*) starts in the inner layer (the mucosa) and grows outward (through the submucosa and the muscle layer). Since 2 types of cells can line the esophagus, there are 2 main types of esophageal cancer:

### Squamous cell carcinoma

The esophagus 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 portion of the esophagus located in the neck region and in the upper two-thirds of the chest cavity. 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 half of esophageal cancers in this country.

### Adenocarcinoma

Cancers that start in gland cells (cells that make mucus) are called *adenocarcinomas*. This type of cancer usually occurs in the distal (lower third) part of the esophagus. Before an adenocarcinoma can develop, gland cells must replace an area of squamous cells, which is what happens in Barrett's esophagus. This occurs mainly in the lower esophagus, which is where most adenocarcinomas start.

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 called the *cardia*), tend to behave like cancers in the esophagus (and are treated like them, as well), so they are grouped with esophagus cancers.

### Rare cancers

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

### Hyperlinks

1. [www.cancer.org/cancer/cancer-basics/what-is-cancer.html](http://www.cancer.org/cancer/cancer-basics/what-is-cancer.html)

### References

American Cancer Society. *Cancer Facts & Figures 2017*. Atlanta, Ga: American Cancer Society; 2017.

Kleinberg L, Kelly R, Yang S, Wang JS, Forastiere AA. Chapter 74 – Cancer of the Esophagus. In: Niederhuber JE, Armitage JO, Dorshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 5th ed. Philadelphia, Pa. Elsevier: 2014.

Posner MC, Minsky B, Ilson DH. Chapter 45: Cancer of the esophagus. In: DeVita VT, Hellman S, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 10th ed. Philadelphia, Pa: Lippincott-Williams & Wilkins; 2015.

Last Medical Review: June 14, 2017 Last Revised: June 14, 2017

# Key Statistics for Esophageal Cancer

The American Cancer Society's estimates for esophageal cancer in the United States for 2019 are:

- About 17,650 new esophageal cancer cases diagnosed (13,750 in men and 3,900 in women)
- About 16,080 deaths from esophageal cancer (13,020 in men and 3,060 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 132 in men and about 1 in 455 in women. (See the next section for [risk factors](#)<sup>1</sup> 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, but is now almost equally as common in African Americans. 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](#)<sup>2</sup> 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](#)<sup>3</sup>.

Visit the [American Cancer Society's Cancer Statistics Center](#)<sup>4</sup> for more key statistics.

## Hyperlinks

1. [www.cancer.org/cancer/esophagus-cancer/causes-risks-prevention/risk-factors.html](http://www.cancer.org/cancer/esophagus-cancer/causes-risks-prevention/risk-factors.html)
2. [www.cancer.org/cancer/esophagus-cancer/detection-diagnosis-](http://www.cancer.org/cancer/esophagus-cancer/detection-diagnosis-)

- [staging/staging.html](#)
3. [www.cancer.org/cancer/esophagus-cancer/detection-diagnosis-staging/survival-rates.html](http://www.cancer.org/cancer/esophagus-cancer/detection-diagnosis-staging/survival-rates.html)
  4. <https://cancerstatisticscenter.cancer.org/>

## References

American Cancer Society. *Facts & Figures 2019*. American Cancer Society. Atlanta, Ga. 2019.

Lifetime Risk (Percent) of Being Diagnosed with Cancer by Site and Race/Ethnicity: Males, 18 SEER Areas, 2012-2014 (Table 1.16) [https://seer.cancer.gov/csr/1975\\_2014/results\\_merged/topic\\_lifetime\\_risk.pdf](https://seer.cancer.gov/csr/1975_2014/results_merged/topic_lifetime_risk.pdf) and Females, 18 SEER Areas, 2012-2014 (Table 1.17) [https://seer.cancer.gov/csr/1975\\_2014/results\\_merged/topic\\_lifetime\\_risk.pdf](https://seer.cancer.gov/csr/1975_2014/results_merged/topic_lifetime_risk.pdf) Accessed on January 3, 2018.

<https://seer.cancer.gov/statfacts/html/esoph.html>

[https://seer.cancer.gov/csr/1975\\_2013/results\\_merged/sect\\_08\\_esophagus.pdf](https://seer.cancer.gov/csr/1975_2013/results_merged/sect_08_esophagus.pdf)

Howlander N, Noone AM, Krapcho M, Miller D, Bishop K, Kosary CL, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). SEER Cancer Statistics Review, 1975-2014, National Cancer Institute. Bethesda, MD, [https://seer.cancer.gov/csr/1975\\_2014/](https://seer.cancer.gov/csr/1975_2014/), based on November 2016 SEER data submission, posted to the SEER web site, April 2017.

Last Medical Review: June 14, 2017 Last Revised: January 8, 2019

---

## 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 that certain gene variants are more common in people with Barrett's esophagus. This may lead to new tests for finding the people who are likely to get Barrett's esophagus and esophageal cancer earlier, so that these problems can be prevented. Understanding these changes may also lead to new [targeted therapies](#)<sup>1</sup> that overcome the effects of these abnormal genes.

## Screening and prevention

The rate of adenocarcinoma of the esophagus has risen sharply in recent decades. Efforts are now being made to reduce obesity, a major risk factor for this form of cancer (and several other types as well).

In people with Barrett's esophagus, researchers are trying to determine if newer tests can tell which patients are likely to go on to develop cancer. This may help doctors determine which patients need intense follow-up and which ones can be examined less frequently.

Researchers are also looking for ways to help stop Barrett's cells from turning into pre-cancer or cancer. Drugs such as proton pump inhibitors and aspirin are now being studied for this purpose.

## Treatment

### Surgery

Doctors are using newer imaging tests and other tests to better determine which people are more likely to be helped by esophagectomy, and which people are less likely to benefit from this major operation.

Doctors are also constantly improving the surgery techniques used to treat esophageal cancer, aiming to make these operations safer and help patients recover from surgery more quickly.

### Chemotherapy

Many studies are testing new ways to combine chemotherapy (chemo) drugs already

known to be active against esophageal cancer to try to improve their effectiveness. Other studies are testing the best ways to combine chemotherapy with radiation therapy.

Researchers are also looking to see if they can examine the proteins inside esophageal cancer cells to tell whether the cancer is likely to respond to chemotherapy. This is important because many people get [chemo](#)<sup>2</sup> and [radiation](#)<sup>3</sup> as part of their initial treatment, often before [surgery](#)<sup>4</sup>. Knowing if a person's cancer is likely to respond to chemo might help doctors choose the best treatment option for the person.

## Immunotherapy

An important part of the immune system is its ability to keep itself from attacking normal cells in the body. To do this, it uses “checkpoints” – molecules on immune cells that need to be turned on (or off) to start an immune response. Cancer cells sometimes use these checkpoints to avoid being attacked by the immune system.

[Immunotherapy](#)<sup>5</sup> 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) targets PD-1, a protein on immune system T cells, that normally helps keep these cells from attacking other cells in the body. Targeting this protein can help the immune system recognize and attack cancer cells. Pembrolizumab is now approved to treat some advanced cancers of the esophagus and gastroesophageal junction. It is typically used after other treatments have been tried. Nivolumab (Opdivo), which also targets PD-1, and many other immunotherapy drugs are also being studied for use against esophageal cancer.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/targeted-therapy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/targeted-therapy.html)
2. [www.cancer.org/cancer/esophagus-cancer/treating/chemotherapy.html](http://www.cancer.org/cancer/esophagus-cancer/treating/chemotherapy.html)
3. [www.cancer.org/cancer/esophagus-cancer/treating/radiation.html](http://www.cancer.org/cancer/esophagus-cancer/treating/radiation.html)
4. [www.cancer.org/cancer/esophagus-cancer/treating/surgery.html](http://www.cancer.org/cancer/esophagus-cancer/treating/surgery.html)
5. [www.cancer.org/cancer/esophagus-cancer/treating/immunotherapy.html](http://www.cancer.org/cancer/esophagus-cancer/treating/immunotherapy.html)

## References

Chak A, Chen Y, Vengoechea J, et al. Variation in age at cancer diagnosis in familial

versus nonfamilial Barrett's esophagus. *Cancer Epidemiol Biomarkers Prev.* 2012;21:376–383.

Kantor ED, Onstad L, Blount PL, Reid BJ, Vaughan TL. Use of statin medications and risk of esophageal adenocarcinoma in persons with Barrett's esophagus. *Cancer Epidemiol Biomarkers Prev.* 2012;21:456–461.

Kastelein F, Spaander MC, Biermann K, et al. Nonsteroidal anti-inflammatory drugs and statins have chemopreventative effects in patients with Barrett's esophagus. *Gastroenterology.* 2011;141:2000–2008.

Kleinberg L, Kelly R, Yang S, Wang JS, Forastiere AA. Chapter 74 – Cancer of the Esophagus. In: Niederhuber JE, Armitage JO, Dorshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 5th ed. Philadelphia, Pa. Elsevier: 2014.

Lagergren J, Lagergren P. Recent developments in esophageal adenocarcinoma. *CA Cancer J Clin.* 2013;63:232–248.

National Cancer Institute. Physician Data Query (PDQ). Esophageal Cancer Treatment. 2013. Accessed at [www.cancer.gov/cancertopics/pdq/treatment/esophageal/HealthProfessional](http://www.cancer.gov/cancertopics/pdq/treatment/esophageal/HealthProfessional) on May 6, 2017.

National Cancer Institute. Find NCI-Supported Clinical Trials. Accessed at <https://www.cancer.gov/about-cancer/treatment/clinical-trials/search> on May 6, 2017.

Palles C, Findlay JM, Tomlinson I. Common Variants Confer Susceptibility to Barrett's Esophagus: Insights from the First Genome-Wide Association Studies. *Adv Exp Med Biol.* 2016;908:265-90.

Posner MC, Minsky B, Ilson DH. CCh 45 - Cancer of the esophagus. In: DeVita VT, Hellman S, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 10<sup>th</sup> ed. Philadelphia, Pa: Lippincott-Williams & Wilkins; 2015.

Shan W, Lassen N, Johnson C, et al. A proprietary multianalyte test for predicting extreme resistance to neoadjuvant 5-FU based chemoradiation (CTRRT) in esophageal adenocarcinoma (EC). *J Clin Oncol.* 2014 (suppl 3; abstr 51).

Spechler SJ. Barrett esophagus and risk of esophageal cancer: A clinical review. *JAMA.* 2013;310:627–636.

The Esophageal Adenocarcinoma Genetics Consortium; The Wellcome Trust Case Control Consortium 2, Su Z, Gay LJ, Strange A, et al. Common variants at the MHC locus and at chromosome 16q24.1 predispose to Barrett's esophagus. *Nat Genet.* 2012;44:1131–1136.

Last Medical Review: June 14, 2017 Last Revised: July 31, 2019

### **Written by**

The American Cancer Society medical and editorial content team  
([www.cancer.org/cancer/acs-medical-content-and-news-staff.html](http://www.cancer.org/cancer/acs-medical-content-and-news-staff.html))

Our team is made up of doctors and oncology certified nurses with deep knowledge of cancer care as well as journalists, editors, and translators with extensive experience in medical writing.

American Cancer Society medical information is copyrighted material. For reprint requests, please see our Content Usage Policy ([www.cancer.org/about-us/policies/content-usage.html](http://www.cancer.org/about-us/policies/content-usage.html)).

**cancer.org | 1.800.227.2345**