

Gastric (Stomach) Cancer

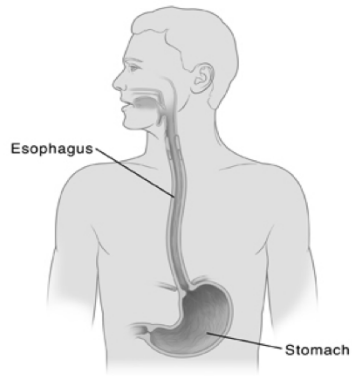


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CANCER CENTER

Gastric cancer is a disease in which malignant (cancer) cells form in the lining of the stomach.

The stomach is a J-shaped organ in the upper abdomen. It is part of the digestive system, which breaks down nutrients (vitamins, minerals, carbohydrates, fats, proteins, and water) in foods that are eaten and helps pass waste material out of the body.

Food moves from the throat to the stomach through a hollow, muscular tube called the esophagus. After leaving the stomach, partly digested food passes into the small intestine and then into the large intestine.



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The wall of the stomach is made up of 3 layers of tissue: the mucosal (innermost) layer, the muscularis (middle) layer, and the serosal (outermost) layer. Gastric cancer begins in the cells lining the mucosal layer and spreads through the outer layers as it grows.

Age, diet, and stomach disease can affect the risk of developing gastric 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 does not mean that you will not get cancer. Talk with your doctor if you think you may be at risk. Risk factors for gastric cancer include the following:

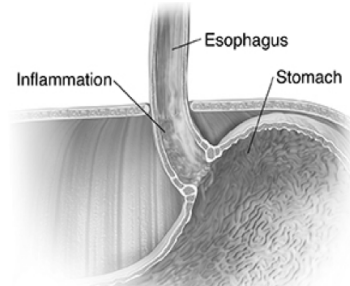
- Having any of the following medical conditions:
 - *Helicobacter pylori* (*H. pylori*) infection of the stomach.
 - Chronic gastritis (inflammation of the stomach).
 - Pernicious anemia.
 - Intestinal metaplasia (a condition in which the normal stomach lining is replaced with the cells that line the intestines).
 - Familial adenomatous polyposis (FAP) or gastric polyps.
- Eating a diet high in salted, smoked foods and low in fruits and vegetables.
- Eating foods that have not been prepared or stored properly.
- Being older or male.
- Smoking cigarettes.
- Having a mother, father, sister, or brother who has had stomach cancer.

Symptoms of gastric cancer include indigestion and stomach discomfort or pain.

These and other signs and symptoms may be caused by gastric cancer or by other conditions.

In the early stages of gastric cancer, the following symptoms may occur:

- Indigestion and stomach discomfort.
- A bloated feeling after eating.
- Mild nausea.
- Loss of appetite.
- Heartburn.



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In more advanced stages of gastric cancer, the following signs and symptoms may occur:

- Blood in the stool.
- Vomiting.
- Weight loss for no known reason.
- Stomach pain.
- Feeling of early fullness when eating.
- Problems digesting food.

Tests used to detect (find) and diagnose gastric cancer:

- **Physical exam and history**
- **Blood chemistry studies:** A procedure in which a blood sample is checked to measure the amounts of certain substances released into the blood by organs

and tissues in the body. An unusual (higher or lower than normal) amount of a substance can be a sign of disease.

- **Complete blood count (CBC):** A procedure in which a sample of blood is drawn and checked for the following:
 - The number of red blood cells, white blood cells, and platelets (sticky part that helps with clotting).
 - The amount of hemoglobin (the protein that carries oxygen) in the red blood cells.
 - The portion of the sample made up of red blood cells.
- **Upper endoscopy:** A procedure to look inside the esophagus (connects the throat and stomach), stomach, and duodenum (first part of the small intestine) to check for abnormal areas. An endoscope (a thin, lighted tube) is passed through the mouth and down the throat into the esophagus.
- **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.

- **Biopsy:** The removal of cells or tissues so they can be viewed under a microscope to check for signs of cancer. A biopsy of the stomach is usually done during the endoscopy.
 - Some gastric cancers have a high level of a protein called HER2, which means that the cancer may also be treated by a targeted therapy.

Certain factors affect prognosis (chance of recovery) and treatment options.

The prognosis (chance of recovery) and treatment options depend on the following:

- The stage of the cancer (whether it is in the stomach only or has spread to lymph nodes and or to other places in the body).
- Your general health.

When gastric cancer is found very early, there is a better chance of recovery. Gastric cancer is often in an advanced stage when it is diagnosed. At later stages, gastric cancer can be treated but rarely can be cured. Taking part in a clinical trial should be considered. Information about ongoing clinical trials is available from the Sanford Health website.

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

The process used to find out if cancer has spread within the stomach 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 following tests and procedures may be used in the staging process:

- **Endoscopic ultrasound (EUS):** A procedure in which an endoscope is inserted into the body, usually through the mouth or rectum. An endoscope is a thin, tube-like instrument with a light and a lens for viewing. A probe at the end of the endoscope is used to bounce high-energy sound waves (ultrasound) off internal tissues or organs and make echoes. The echoes form a picture of body tissues called a sonogram. This procedure is also called endosonography.
- **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.

- **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. A PET scan and CT scan may be done at the same time. This is called a PET-CT.

There are three ways that cancer spreads in the body.

Cancer can spread through tissue, the lymph (filter and transport) 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.
- **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.

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.

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

TNM Staging

TNM staging provides some of the facts about the cancer.

- **T** – Tumor; How big the tumor is and how deeply it's invading into the stomach
- **N** – Node – if the cancer is found in your lymph nodes
- **M** – Metastasis – When the cancer spreads to a different area from where it started

The following stages are used for gastric cancer:

Stage 0 (Carcinoma in Situ)

In stage 0, abnormal cells are found in the inside lining of the mucosa (innermost layer) of the stomach wall. These abnormal cells may become cancer and spread into nearby normal tissue. Stage 0 is also called carcinoma in situ.

Stage I

In stage I, cancer has formed in the inside lining of the mucosa (innermost layer) of the stomach wall. Stage I is divided into stage IA and stage IB, depending on where the cancer has spread.

- **Stage IA:** Cancer may have spread into the submucosa (layer of tissue next to the mucosa) of the stomach wall.
- **Stage IB:** Cancer:
 - May have spread into the submucosa (layer of tissue next to the mucosa) of the stomach wall and

- is found in 1 or 2 lymph nodes near the tumor; **or**
- Has spread to the muscle layer of the stomach wall.

Stage II

Stage II gastric cancer is divided into stage IIA and stage IIB, depending on where the cancer has spread.

- **Stage IIA:** Cancer:
 - Has spread to the subserosa (layer of tissue next to the serosa) of the stomach wall; **or**
 - Has spread to the muscle layer of the stomach wall and is found in 1 or 2 lymph nodes near the tumor; **or**
 - May have spread to the submucosa (layer of tissue next to the mucosa) of the stomach wall and is found in 3 to 6 lymph nodes near the tumor.
- **Stage IIB:** Cancer:
 - Has spread to the serosa (outermost layer) of the stomach wall; **or**
 - Has spread to the subserosa (layer of tissue next to the serosa) of the stomach wall and is found in 1 or 2 lymph nodes near the tumor; **or**
 - Has spread to the muscle layer of the stomach wall and is found in 3 to 6 lymph nodes near the tumor; **or**
 - May have spread to the submucosa (layer of tissue next to the mucosa) of the stomach wall and is found in 7 or more lymph nodes near the tumor.

Stage III

Stage III gastric cancer is divided into stage IIIA, stage IIIB, and stage IIIC, depending on where the cancer has spread.

- **Stage IIIA:** Cancer has spread to:
 - The serosa (outermost) layer of the stomach wall and is found in 1 or 2 lymph nodes near the tumor; **or**
 - The subserosa (layer of tissue next to the serosa) of the stomach wall and is found in 3 to 6 lymph nodes near the tumor; **or**
 - The muscle layer of the stomach wall and is found in 7 or more lymph nodes near the tumor.
- **Stage IIIB:** Cancer has spread to:
 - Nearby organs such as the spleen, transverse colon, liver, diaphragm, pancreas, kidney, adrenal gland, or small intestine, and may be found in 1 or 2 lymph nodes near the tumor; **or**
 - The serosa (outermost layer) of the stomach wall and is found in 3 to 6 lymph nodes near the tumor; **or**
 - The subserosa (layer of tissue next to the serosa) of the stomach wall and is found in 7 or more lymph nodes near the tumor.
- **Stage IIIC:** Cancer has spread to:
 - Nearby organs such as the spleen, transverse colon, liver, diaphragm, pancreas, kidney, adrenal gland, or small intestine, and may be found in 3 or more lymph nodes near the tumor; **or**

- The serosa (outermost layer) of the stomach wall and is found in 7 or more lymph nodes near the tumor.

Stage IV

In stage IV, cancer has spread to distant parts of the body.

Treatment option overview

Treatment given before surgery is called neoadjuvant therapy. Treatment given after surgery is called adjuvant therapy.

Surgery

Surgery is a common treatment for gastric cancer. The following types of surgery may be used:

- **Subtotal gastrectomy:** Removal of the part of the stomach that contains cancer, nearby lymph nodes, and parts of other tissues and organs near the tumor. The spleen may be removed. The spleen is an organ in the upper abdomen that filters the blood and removes old blood cells.
- **Total gastrectomy:** Removal of the entire stomach, nearby lymph nodes, and parts of the esophagus, small intestine, and other tissues near the tumor. The spleen may be removed. The esophagus is connected to the small intestine so the patient can continue to eat and swallow.

If the tumor is blocking the stomach but the cancer cannot be completely removed by standard surgery, the following procedures may be used:

- **Endoluminal stent placement:** A procedure to insert a stent (a thin, expandable tube) in order to keep a passage (such as arteries or the esophagus) open. For tumors blocking the passage into or out of the stomach, surgery may be done to place a stent from the esophagus to the stomach or from the stomach to the small intestine to allow the patient to eat normally.
- **Endoluminal laser therapy:** A procedure in which an endoscope (a thin, lighted tube) with a laser attached is inserted into the body. A laser is an intense beam of light that can be used as a knife.
- **Gastrojejunostomy:** Surgery to remove the part of the stomach with cancer that is blocking the opening into the small intestine. The stomach is connected to the jejunum (a part of the small intestine) to allow food and medicine to pass from the stomach into the small intestine.

Chemotherapy

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing. When chemotherapy is taken by mouth or injected into a vein the drugs enter the bloodstream and can reach cancer cells throughout the body (systemic chemotherapy).

The way the chemotherapy is given depends on the type and stage of the cancer being treated.

Radiation 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. The way the radiation therapy is given depends on the type and stage of the cancer being treated.

Chemoradiation

Chemoradiation therapy combines chemotherapy and radiation therapy to increase the effects of the radiation.

Targeted therapy

Targeted therapy is a type of treatment that uses drugs or other substances to identify and attack specific cancer cells. Targeted therapies usually cause less harm to normal cells than chemotherapy or radiation therapy do. Monoclonal antibody therapy is a type of targeted therapy used in the treatment of gastric cancer.

Monoclonal antibody therapy uses antibodies made in the laboratory from a single type of immune system cell. These antibodies can identify substances on cancer cells or normal substances that may help cancer cells grow. The antibodies attach to the substances and kill the cancer cells, block their growth, or keep them from spreading. Monoclonal antibodies are given by infusion.

Treatment for gastric cancer may cause side effects.

Your healthcare team will help you manage side effects of treatment. It is important to report any side effects or changes in the way you are feeling. You may meet with experts such as a registered nutritionist to help you take in the proper amount of calories and protein for healing.

Clinical trials

Clinical trials are done to find out if new cancer treatments are safe and effective or better than the standard treatment.

People who take part in clinical trials may receive:

- The standard drugs alone or
- The standard drugs plus the new treatment being studied

Taking part in a clinical trial helps improve the way cancer will be treated in the future. Even when clinical trials do not lead to effective new treatments, they often answer important questions and help move research forward.

Some clinical trials only include people who have not yet received treatment. Other trials test treatments for those whose cancer has not gotten better. There are also clinical trials that test new ways to stop cancer from coming back or reduce the side effects of cancer treatment.

Many of today's standard treatments for cancer are based on earlier clinical trials. **Ask if there is a clinical trial right for you.**

Follow-up tests may be needed.

Some of the tests that were done to diagnose the cancer or to find out the stage of the cancer may be repeated. Some tests will be repeated in order to see how well the treatment is working. Decisions about whether to continue, change, or stop treatment may be based on the results of these tests.

Some of the tests will continue to be done from time to time after treatment has ended. The results of these tests can show if your condition has changed or if the cancer has recurred (come back). These tests are sometimes called follow-up tests or check-ups.

Support is available for coping with changes that may have happened as a result of cancer treatment. Your healthcare team can offer ideas as well as a plan of care for long-term follow-up.

To learn more about stomach cancer

- **American Cancer Society**

<https://www.cancer.org/>

- **National Cancer Institute**

<https://www.cancer.gov/>

- **National Comprehensive Cancer Network
Guidelines for Patients**

<https://www.nccn.org/patients/guidelines/cancers.aspx>

- **MedlinePlus**

<https://medlineplus.gov/>

Common questions

What does the pathology report say?

What is the stage of my cancer?

What are my goals for treatment?

What are my treatment choices?

What kind of support services are available for me about finances, emotions, spiritual questions, etc.?

My Health Care Team	Contact Information
Surgeon:	
Medical Oncologist:	
Radiation Oncologist:	
Primary Care Doctor:	
Navigator:	
Nurse:	
Registered Dietitian Nutritionist:	
Other:	

The content of this booklet was adapted from content originally published by the National Cancer Institute. PDQ® Adult Treatment Editorial Board. PDQ Gastric Cancer Treatment.

<https://www.cancer.gov/types/stomach/patient/stomach-treatment-pdq>

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