

Stomach cancer - gastric carcinoma

What is stomach cancer, also known as gastric carcinoma?

The stomach is a hollow, muscular organ situated between the spleen and the liver, on the left side of the upper abdomen below the diaphragm. The oesophagus (gullet) joins the top end of the stomach and the duodenum (first part of the small intestine) is attached to the bottom end.

The stomach is divided into several different sections:

- Cardia (entrance to the stomach) at the junction with the oesophagus
- Gastric fundus, which curves upwards like a dome beneath the diaphragm
- Gastric corpus or body
- Antrum – area before the pyloric sphincter, toward the small intestine

With the aid of the gastric juices, the stomach breaks food down to a mixed pulp which remains there for an average of 3 hours. The pulp is then discharged into the small intestine where it is digested further.

The stomach wall is two to three millimetres thick and consists of four layers. These are (from the inside outwards): the gastric mucous membrane, a layer of connective tissue containing numerous blood vessels, a muscle layer and the peritoneum, which surrounds the outside of the stomach. The task of the stomach muscles is to mix the food pulp and transport it onwards.

The gastric mucous membrane consists of large numbers of glands. These produce gastric acid and digestive secretions, and also a neutral mucus. The gastric mucus coats the mucous membrane with a protective film and thus protects it from the aggressive digestive juices, the gastric acid and other damaging influences.

Inflammation of the gastric mucous membrane, ulcers and also stomach cancer may develop at sites where this protective layer has been damaged. Malignant tumours of the stomach – stomach cancer – usually develop in the mucous membrane of the stomach

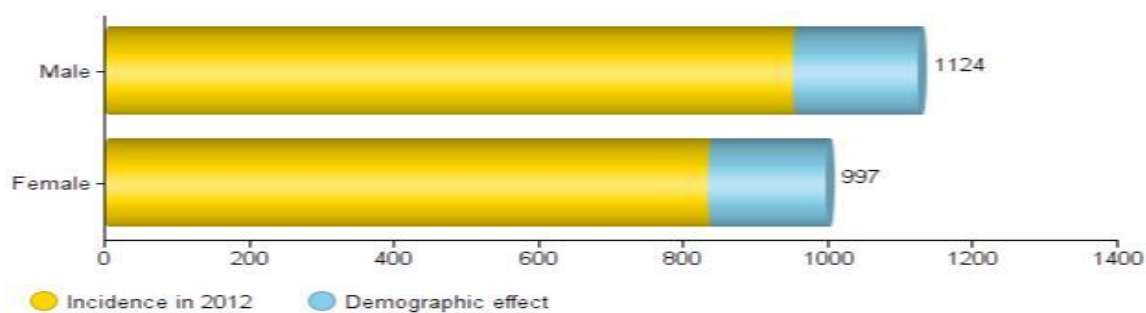
Egypt-Stomach cancer

Year	Estimated number of new cancers (all ages)	Male	Female	Both sexes
2012		953	836	1789
	ages < 65	621	544	1165
	ages >= 65	332	292	624
2020		1124	997	2121
	ages < 65	711	615	1326
	ages >= 65	413	382	795
Demographic change		171	161	332
	ages < 65	90	71	161
	ages >= 65	81	90	171

GLOBOCAN 2012 (IARC) - 28.1.2017

Population forecasts were extracted from the *United Nations, World Population prospects, the 2012 revision*. Numbers are computed using age-specific rates and corresponding populations for 10 age-groups.

International Agency for Research on Cancer
Egypt
Stomach
Number of new cancers in 2020 (all ages)



What are the causes of and risk factors for developing stomach cancer?

Certain factors increase the risk of developing stomach cancer.

In addition to a degree of genetic predisposition, diet plays an important role. Smoking also influences the development of stomach cancer. Bacterial infection and previous gastric diseases can also increase the risk of developing cancer.

Risk factor: diet

Eating a lot of very salty food and low consumption of fresh vegetables and fruit are particular risk factors. Cured, barbecued and smoked foods also appear to encourage the development of stomach cancer.

Risk factor: infections

Inflammation of the gastric mucous membrane caused by Helicobacter pylori bacteria can increase the risk of developing stomach cancer.

Risk factor: previous gastric diseases

A number of previous gastric diseases, such as chronic inflammation of the gastric mucous membrane, can increase the risk of stomach cancer.

Patients who suffer from gastric polyps – benign growths on the gastric mucous membrane – and from a particular form of anaemia are also at increased risk.

People who have had stomach surgery many years previously are also exposed to a higher risk.

Risk factor: smoking

Smoking is also regarded as a risk factor for stomach cancer. The substances contained in cigarette and tobacco smoke, some of which are carcinogenic, dissolve in the saliva and thus enter the stomach. The estimated risk of developing stomach cancer for smokers is three times greater than for non-smokers.

Risk factor: genetic predisposition

Stomach cancer occurs more commonly in some families.

What role does lifestyle play in stomach cancer?

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How is stomach cancer diagnosed?

The following symptoms may be an indication of gastric disease and the doctor should be informed of them:

- Upper abdominal problems
- A feeling of fullness and pressure
- Burping
- Bad breath
- Nausea
- Vomiting
- Wind

- Loss of appetite
- Sudden dislike of certain foods, particularly meat
- Weight loss
- Black stools
- Pallor and exhaustion
- Loss of physical strength

All of these symptoms may have harmless causes, but they may also be a pointer to stomach cancer.

The chances of recovery are good if stomach cancer is detected at an early stage.

As well as a physical examination, the doctor may arrange tests of the stools and the blood, if appropriate, and perform an ultrasound scan of the upper abdomen. Gastroscopy (imaging of the stomach) allows fast, relatively certain and above all early diagnosis. Gastroscopy examines the upper digestive system. It involves the doctor passing a tube with a light into the oesophagus and stomach and down as far as the duodenum.

Observation of the mucous membranes enables any changes to be identified. The doctor will take specific tissue samples, which will be examined under a microscope.

If the doctor does find stomach cancer, additional investigations will follow. These will ascertain the extent to which the cancer has already spread, whether lymph nodes are affected or whether secondary cancers have formed in other parts of the body (metastases).

The conventional investigative methods used include:

- Ultrasound examination (sonography)
- Laboratory tests
- Endosonography (endoscopic ultrasound)
- X-rays of the lungs

The following may also be used:

- Computed tomography (CT)
- Imaging of the abdomen (laparoscopy)
- Magnetic resonance imaging (MRI) of the liver

Only when all the necessary investigations have been completed can the doctor and patient decide together what treatment measures are most suitable in each individual case.

How is stomach cancer treated?

The following methods can be considered for the treatment of stomach cancer:

- Surgery
- Chemotherapy

- Radiotherapy

Surgery is the most important procedure for the treatment of stomach cancer. The aim of the operation is to remove the tumour completely and thus cure the disease permanently.

Chemotherapy and, in some cases, radiotherapy are available as additional options.

Surgery

The surrounding lymph nodes are always removed in addition during the operation. This is a precautionary measure, because the cancer cells may spread via the lymphatic system. Microscopic examination of the lymph nodes removed also reveals the extent to which the disease has already spread.

Chemotherapy

The aim of chemotherapy is to destroy cancer cells throughout the body with medicines that inhibit cell growth (cytostatics). Cytostatic drugs are very effective against cells that grow rapidly, a characteristic that is especially typical of cancer cells.

It is not possible to cure stomach cancer by giving cytostatic drugs alone.

Chemotherapy before and after surgery improves the chance of recovery for the patient if the cancer is over a certain size.

Antibody therapy

If the stomach cancer has already spread, the option of antibody therapy is available. The active substance is given as an infusion every three weeks in combination with chemotherapy.

Radiotherapy

Radiotherapy is occasionally used for stomach cancer if a patient cannot undergo surgery or does not respond to chemotherapy. Radiotherapy is used in particular to treat pain and also to treat metastases.

Radiotherapy in combination with chemotherapy is currently also given even before surgery. In conjunction with chemotherapy, radiotherapy can help reduce the size of the tumour.

Pain therapy

If the cancer is already at an advanced stage, the patient will often have pain. Effective measures to combat the pain then become important. With the drugs and methods now available, cancer pain can be successfully alleviated in most cases.

Additional information: stomach cancer – classification of tumour type and tumour stage

Apart from gastric imaging (gastroscopy) and the Hemoccult test for hidden blood in the stools, the purpose of the detailed investigations in stomach cancer is to establish the tumour stage (staging), to which both the treatment and the prognosis are linked. Important criteria in this context are the size of the tumour, whether there is

involvement of neighbouring organs are affected and whether secondary tumours are present in the lymph nodes and distant organs.

TNM classification

According to the international TNM classification system, tumour stage is classified as follows:

T: Primary tumour (the cancerous growth that developed first)	
T is	Carcinoma in situ, in other words the cancer is restricted to the surface of the mucous membrane. At this stage the cancer is not yet metastatic.
T1	Early cancer: Cancer of the stomach is referred to as “early cancer” if it has only grown into the upper layers of the mucous membrane (mucosa) and the layer of connective tissue beneath the mucous membrane (submucosa) close to the surface and has not yet reached the deeper layers. If the tumour has already grown into the deeper layers of the gastric wall, it is referred to as an "advanced cancer".
T2	Invasion of the cancer as far as the muscularis, i.e. the tumour has grown into the muscle layer of the stomach.
T3	Invasion of the cancer as far as the peritoneum (serosa) but not into neighbouring organs and structures.
T4	The cancer is growing into neighbouring structures (e.g. spleen, large intestine, liver, diaphragm, pancreas, abdominal wall, kidney, adrenal glands, small intestine).
N: Lymph nodes affected	
N0	No lymph nodes affected.
N1	1 to 2 neighbouring (regional) lymph nodes affected.
N2	3 to 6 neighbouring (regional) lymph nodes affected.
N3	7 to 15 neighbouring (regional) lymph nodes affected (N3a) or more than 15 neighbouring lymph nodes affected (N3b).
M: Distant metastases	
M0	No distant metastases.
M1	Distant metastases present.

Lauren classification

The Lauren classification system is also used in addition to the TNM system in stomach cancer and is particularly important with regard to the extensiveness of any surgery. This system classifies the cancer on the basis of the type of growth:

- Intestinal type: the cancer resembles mushrooms in its growth (it is polypoid) in the stomach and is well defined. This type of cancer has a good prognosis.

- Diffuse type: the cancer is growing into the gastric wall and is poorly defined. The prognosis is not good due to early metastasis.
- Combined type: the cancer is growing both towards the gastric cavity and laterally in the gastric wall.

Grading (degree of differentiation)

The maturity of the cancer cells (degree of differentiation) is also classified in a range from

- G1 = high (high level of similarity to healthy cells)
- G2 = moderate
- G3 = low
- G4 = undifferentiated (no resemblance to mature healthy cells)

The greater the degree of differentiation of its cells (i.e. the lower the grading stage), the slower and less aggressive the growth of the tumour.

Metastasis

Metastases are secondary growths of malignant tumours. The following forms of metastasis may occur with stomach cancer:

- Lymph node metastases: Seventy per cent of stomach cancer patients have lymph node metastases at the time of the initial diagnosis. A lymph node in the left collarbone fossa (hollow) (Virchow's lymph node) is often affected in cases of stomach cancer.
- Distant metastases: The spread of the stomach cancer cells with migration of secondary cancers via the bloodstream affects the liver in particular, followed by the lungs, bones and brain.
- Per continuitatem: If the stomach cancer grows into the neighbouring organs – the oesophagus, duodenum, colon and pancreas – additional colonisation may develop.
- "Drop" metastasis: If cancer cells on the exterior of the stomach wall become detached, the stomach cancer may spread to the peritoneum (peritoneal carcinomatosis). Fluid is discharged into the abdominal cavity (ascites). What are known as "drop metastases" may also form in the ovaries or the pouch of Douglas (the lowest part of the pelvis).

MALT lymphoma

Malignant lymphomas, also known as MALT lymphomas, occupy a special position in cases of stomach cancer. These are malignantly mutated lymphatic tissue and not, as is the case with the other tumours, malignant tissue from the gastric mucous membrane.