

Bowel cancer

What is bowel cancer – also known as colon cancer or colorectal cancer

The term “bowel cancer” describes cancers of the colon (colon cancer) and the rectum (rectal cancer). They are collectively referred to as colorectal cancer. Bowel cancer may develop in any of the sections of the colon and rectum. One area in which it is commonly found is the lower section of the colon, in the last 30 to 40 centimetres. Colon polyps are precursors of cancer in many cases. These are growths in the colon that are initially benign, often resembling mushrooms. Some 90 per cent of cases of bowel cancer occur as a result of these polyps mutating so that their cells turn into cancer cells.

Egypt-Colorectum cancer

Year	Estimated number of new cancers (all ages)	Male	Female	Both sexes
2012		2115	1945	4060
	ages < 65	1514	1294	2808
	ages >= 65	601	651	1252
2020		2468	2311	4779
	ages < 65	1719	1452	3171
	ages >= 65	749	859	1608
Demographic change		353	366	719
	ages < 65	205	158	363
	ages >= 65	148	208	356

GLOBOCAN 2012 (IARC) - 24.1.2017

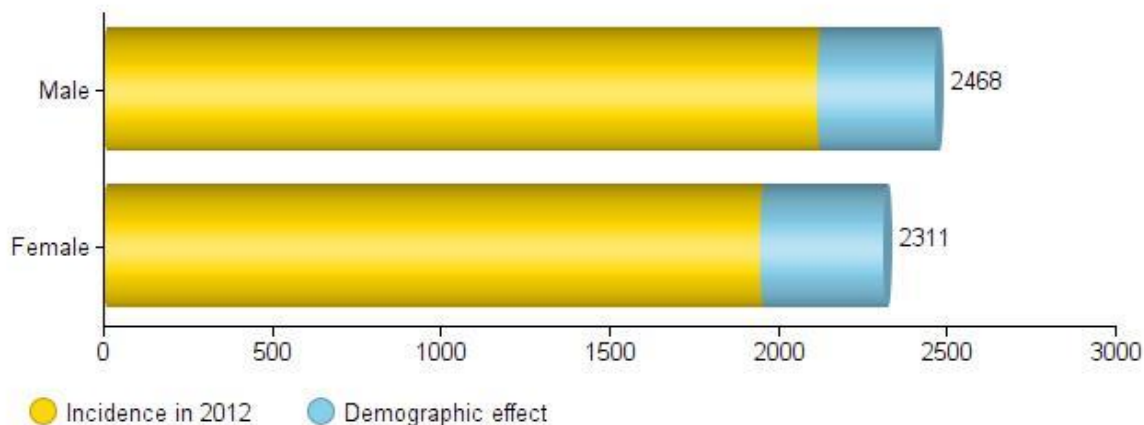
Population forecasts were extracted from the *United Nations, World Population prospects, the 2012 revision*. Numbers are computed using age-specific rates and corresponding populations for 10 age-groups.

International Agency for Research on Cancer

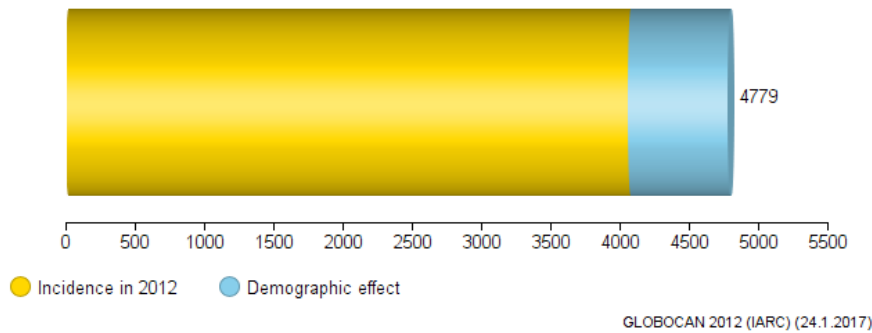
Egypt

Colorectum

Number of new cancers in 2020 (all ages)



GLOBOCAN 2012 (IARC) (24.1.2017)



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

People often have a predisposition to a disease. Certain dietary and lifestyle habits may influence the development of colorectal cancer. People with benign or inflammatory bowel diseases are also at risk.

What role does lifestyle play in bowel cancer?

Diet

A healthy diet with fruit and vegetables has a distinctly positive effect. A high proportion of vitamins and minerals in food reduces the risk of developing bowel cancer.

On the other hand, a high-fat diet increases this risk. Animal fats in particular can increase the risk - in other words, frequent consumption of meat and processed meat products (e.g. sausage and cold cuts). Studies have shown that there are differences between the various types of meat: frequent consumption of “red meat” (beef, pork, lamb) increases the risk of disease, while increased consumption of “white meat” (poultry) and fish reduces the risk. Potentially carcinogenic aromatic substances are known to develop above a certain temperature when cooking meat and meat products.

Exercise

Several studies show that the risk of bowel cancer is higher in professions that are mostly sedentary. For people with jobs involving physical exercise or for people who are generally very active there is a lower risk of developing the disease. It has been shown that the risk increases with longer sedentary periods.

Excess weight, lack of exercise and nicotine dependence should all be avoided.

How is bowel cancer diagnosed?

Early detection

About 90 per cent of all bowel cancer patients can be cured if diagnosed early. Early detection is particularly important in bowel cancer, which is why early detection and preventive screening examinations must be provided by the statutory health insurance companies from the age of 50.

Three options are available to the doctor for diagnosis:

- Palpation
- Occult blood test (Hemoccult test)
- Bowel imaging (colonoscopy) – with tissue sampling if appropriate

In a palpation examination, the doctor will carefully examine the rectum (back passage) with the fingers. Cancer located close to the anus can be detected at an early stage by palpation, sometimes even at the precancerous stage.

The occult blood test reveals hidden blood in the stool that cannot be seen. However, not all cancers or precancerous lesions cause bleeding in the colon.

Colonoscopy is currently the most reliable method for early detection of bowel cancer. Colonoscopy is also able to pick up the precursors of bowel cancer, known as adenomas, and they can sometimes be removed during the same procedure.

Diagnostics

If a tumour in the bowel is suspected, various examinations will be instituted to establish whether a tumour is actually present. If this is the case, the doctor will ascertain the extent to which the tissue changes have already advanced.

The most important methods of investigation for detecting a tumour are:

- Palpation (digital rectal examination)
- Occult blood test (Hemoccult test)
- Rectoscopy (imaging of the rectum to a depth of 20 cm using a rigid endoscope)
- Sigmoidoscopy (partial imaging of the colon using a flexible endoscope)
- Colonoscopy (imaging of the entire bowel using a flexible endoscope)
- X-ray examination using contrast media (colon contrast enema)

If cancer is found, additional investigations will follow to determine the spread of the tumour to neighbouring tissue and other organs.

The most important methods of investigation for detecting bowel cancer are:

- Ultrasound investigation (sonography/endosonography)
- Computed tomography (CT)
- Magnetic resonance imaging (MRI)
- Laboratory tests

Only once all the investigations have been completed can the treatment steps required be decided.

How is bowel cancer treated?

If bowel cancer is diagnosed, the doctors involved will discuss with the patient in detail the most suitable treatment strategy for him or her.

The following treatment methods are available:

- Surgery
- Chemotherapy
- Radiotherapy
- Combined radiotherapy and chemotherapy (radiochemotherapy)
- Targeted therapies, immunotherapy
- Physical procedures (cryotherapy, thermal, high-frequency and laser procedures)

Surgery

A tumour is usually operated on, regardless of the stage of the disease. The surgeon will attempt complete removal of both the tumour and the lymph nodes surrounding it. This is easily achieved, particularly in the early stage of bowel cancer, and increases the chance of complete recovery. The tumour is usually operated on even in cases of advanced bowel cancer.

Radiotherapy

Radiotherapy involves destroying cancer cells using high-energy radiation. It is used to reduce tumour size before surgery and thus increase the chances of a cure after surgery. Radiotherapy is not usually given alone but is combined with chemotherapy. In this case the treatment is described as radiochemotherapy.

Chemotherapy

Chemotherapy is usually given if it has not proved possible to remove the tumour completely despite surgery, or if it is suspected that cancer cells are still present in other parts of the body. Chemotherapy is often used even before surgery to reduce the size of a tumour or associated metastases in advance. Additional, supportive chemotherapy or radiochemotherapy may be given even after complete removal of the tumour. This can substantially reduce the risk of relapse. Chemotherapy is also used to stop the disease progressing and to improve the patient's quality of life.

Cytostatic drugs in the treatment of bowel cancer

The medicines used in chemotherapy are called "cytostatics". A variety of different cytostatic drugs is available to the doctor today. He may combine a number of drugs so as to increase their effect. Cytostatic drugs attack all cells that divide. They are particularly effective against cells that divide very rapidly, such as cancer cells. Cytostatic drugs can thus halt tumour growth. In addition, they travel throughout the body in the bloodstream and so can also reach cancer cells in metastases.

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

The extent to which the disease has already developed crucial for planning the treatment of bowel cancer. A number of investigations are required to determine the stage of the disease – the medical term for this is "staging" – and these take a number of days or weeks to complete.

An operation is required in almost every case of bowel cancer. It is not only an important first treatment step but also provides vital indications as to the actual stage of the disease. The extent to which the tumour has actually spread in the bowel, how deeply it has grown into the wall of the bowel and what colonies it has formed in the lymph nodes and adjacent organs can all be determined accurately only after the operation. In addition, it is only after microscopic examination of the tumour tissue removed that its characteristics and the actual aggressiveness of the disease can be established ("grading").

Once all the important information has been collected, the doctors compile the data on the bowel cancer they are treating into disease stages.

TNM classification

The stage of the disease is expressed using the TNM classification system which uses the three characteristics below:

T stands for Tumour and describes the size and extent of the tumour; in the case of bowel cancer, this is the tumour in the bowel.

N describes the neighbouring lymph nodes (N for Nodus, the Latin for node) that have been colonised by the tumour.

M means the absence or presence of (distant) Metastases, which means distant colonisation and secondary growths in other organs.

The letter is followed by a number, defining the relevant T, N and M stage.

T1-4 and **Tis**: T stands for Tumour; the higher the number, the greater the spread of the cancer into the wall of the bowel or surrounding tissue.

Tis	“Carcinoma in situ”: a very early form of cancer. In this case, cancer cells can only be found in the upper layers of the mucous membrane of the bowel.
T1	The tumour is confined to the mucous membrane (mucosa) of the bowel.
T2	The muscle layer (muscularis) of the wall of the bowel is affected in addition to the mucous membrane.
T3	The tumour has grown into all the layers of the bowel wall.
T4	The tumour has spread from the bowel into neighbouring tissue organs.

N0-2: N stands for Nodus, the Latin for node. The term refers here to the lymph nodes, the status of which is described by the letter N.

N0	The neighbouring (regional) lymph nodes are free from cancer cells.
N1	One to three lymph nodes in the vicinity of the tumour are affected by cancer cells.
N2	Four or more lymph nodes in the vicinity are affected by cancer cells.

M0-1: M stands for metastases. The term refers here to distant metastases, i.e. metastases in other, distant organs.

M0	No distant metastases are present.
M1	Distant metastases are present in other organs or distant lymph nodes.

The TNM classification is completed by a number of other abbreviations:

x: Instead of a number, the “x” means that the circumstances in this case are not clear as yet, e.g. T2, Nx, Mx.

c : Prior to surgery, the TNM classification is based on the results of the examinations performed (c = clinical). This may be illustrated with a “c”, e.g. cT2, N1, M0.

p: If the tumour tissue has been microscopically examined after surgery, this histopathological finding is given with a “p”, e.g. pT2, pN1, pM0.

m: If several, mutually independent tumours (not metastases) were found at the same time, this is described with an “m” (multiple), e.g. T1(m), N0, M0.

r: If the case involves a recurrence of a tumour, known as a relapse, this is expressed with an “r”, e.g. rT3, N1, M0.

Stages of the disease

The doctors compile the data from the TNM classification into disease stages:

UICC Stages I to IV: This staging classification system originates from the “Union Internationale Contre le Cancer” (UICC, Union for International Cancer Control, 1997). Today, it is the most commonly used, up-to-date and clearest form of classification. Each stage is described precisely using the TNM classification.

Dukes Classes A-D: This classification system was originally developed in 1932 and has been subject to frequent changes since then. Today, classification on the basis of UICC stages is more commonly used. Dukes Classes A to D correspond to UICC Stages I to IV.

Stage (UICC)	Dukes	T	N	M
Stage 0		Tis	N0	M0
Stage I	A	T1, T2	N0	M0
Stage II	B	T3, T4	N0	M0
Stage III	C	all T	N1, N2	M0
Stage IV	(D)	all T	all N	M1

Tissue characteristics (grading) After the operation, doctors assess the tumour tissue in the laboratory. Microscopic examination reveals how aggressive and malignant the cancer cells in a tumour are. This characterisation of a tumour is known as "grading". Bowel cancer consisting of aggressive cancer cells will grow faster and metastasise in other organs sooner. To put it in simple terms, it could be said that the greater the difference between the cancer cells and normal, healthy bowel cells, the more malignant the disease is considered to be. Doctors put it like this: undifferentiated tumour cells exhibit high levels of malignancy, well differentiated cells low levels of malignancy. Four stages are distinguished: G1 to G4, known as grades of malignancy.

G1	Low-grade malignancy: the tumour cells are well differentiated, in other words they still look like cells of the mucous glands found in the wall of the bowel.
G2	Moderate-grade malignancy: a stage in between G1 und G3; the cancer cells are moderately differentiated.
G3	High-grade malignancy: the cancer cells are poorly differentiated, in other words they look very different from normal cells of the mucous glands.
G4	Very high-grade malignancy: the cancer cells are totally undifferentiated and bear no resemblance at all to the cells of the mucous glands.

Classification on the basis of the result of surgery

Whether or not it was actually possible to completely remove the tumour from the bowel is also investigated after the operation. The surgically removed tissue is examined in the laboratory to see whether the surgical margins are located in healthy tissue, i.e. that the tumour has been excised "in sano" (into healthy tissue). This result is described as an R0 resection. "R" stands for any residual tumour remaining).

R0	No residual tumour present, i.e. complete excision in sano (R0 resection).
R1	Residual tumour present, only visible under the microscope.
R2	Residual tumour present that can also be seen with the naked eye.

The aim of every bowel cancer operation is to achieve an R0 resection.