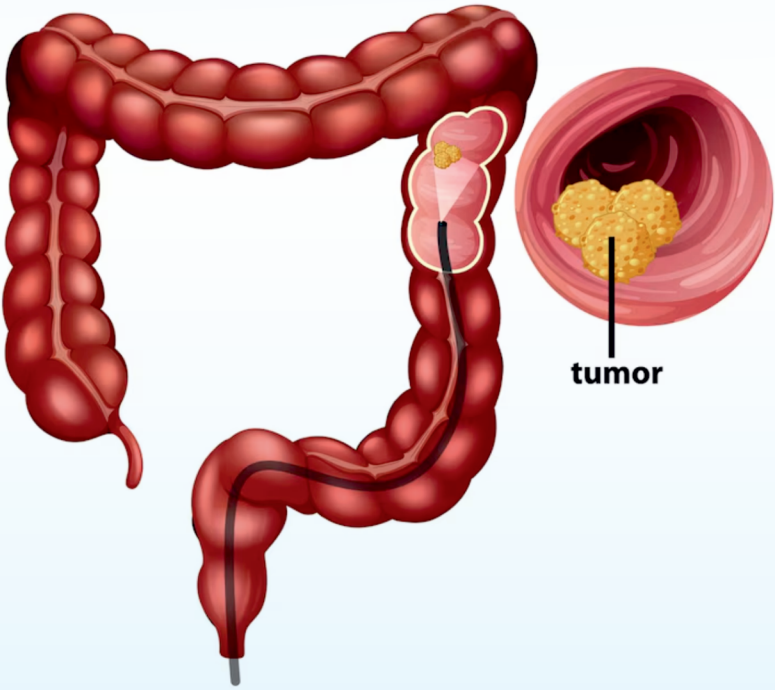
Indraprastha Apollo HOSPITALS
TOUCHING LIVES

Educate...Prevent...Cure

COLORECTAL
CANCER AWARENESS



Dr. Deepak Govil & Dr. Vivek Tandon

COLO RECTAL CANCER RESEARCH FOUNDATION
Registered Under Societies Registration Act 1860

Educate... Prevent... Cure

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OUR VISION

Prevention

- improving lifestyles and diets to reduce occurrence of the disease
- creating awareness about the disease in the general public

Early Diagnosis

- educating the public about symptoms not to be ignored
- promoting screening programs – specially in high risk groups

Treatment

- to standardize treatment plans for various stages of the cancer
- create multidisciplinary groups including surgeons, medical and radiation oncologists for optimal treatment planning
- To educate physicians and surgeons about newer advances in the management of colorectal cancer
- To make available the latest technology to our patients

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MESSAGE FROM THE EDITORS

Colorectal cancer as a health problem is rapidly increasing in India. Changing lifestyles to more western pattern and eating habits is making the numbers in India inch closer to those seen in the west. The general public is ignorant about the symptoms and are often confused with common conditions like piles. Therefore, often patients end up seeking medical advice late when the disease has already progressed to an advanced stage. This limits the treatment options and also worsens the outcomes.

Colorectal cancer in contrast to other cancers, is closely related to diet (junk food), obesity and a sedentary lifestyle. It is therefore, to an extent, preventable. Efforts to increase awareness regarding colo-rectal cancer in the general population would go far in fighting the disease.

If detected in time colorectal cancer can almost be cured and a patient can lead an almost normal life after treatment. Identification of the high risk groups will allow for early detection permitting almost curative treatment. Elimination of myths associated with the disease and its treatment will make patients more receptive to treatment.

"Colorectal cancer is beatable" and that is the primary objective of our foundation

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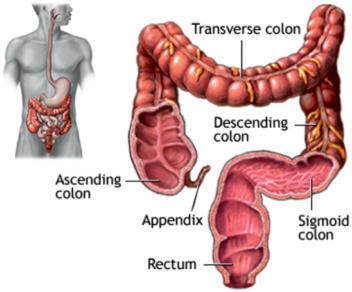
COLORECTAL CANCER

The gastrointestinal tract (GIT) in humans extends from the mouth and to the anus. The food we ingest passes from the mouth to the food pipe (esophagus), through the stomach to the small intestine and finally into the large intestine. The Large intestine lies in the latter part of the gut and comprises of two parts – the colon and the rectum. The colon is further subdivided into the caecum, ascending colon, transverse colon, descending colon and sigmoid colon.

The entire gut measures approximately 6-7 meters in an adult and the large intestine comprises about 150 cm of it.

Functions of the large intestine

- Food is primarily digested and absorbed in the small intestine. The colon is responsible for absorption of water and electrolytes from the intestinal contents entering from the small intestine.
- This water and electrolyte absorption causes the intestinal contents to acquire a more solid form.
- The right side of the colon acts more as an absorptive unit and left colon acts as a reservoir.
- Once the contents reach the rectum an individual feels the urge to defecate



What is colorectal cancer ?

Cancer arising from the large intestine, the colon or the rectum, is referred to as colorectal cancer.

Epidemiology

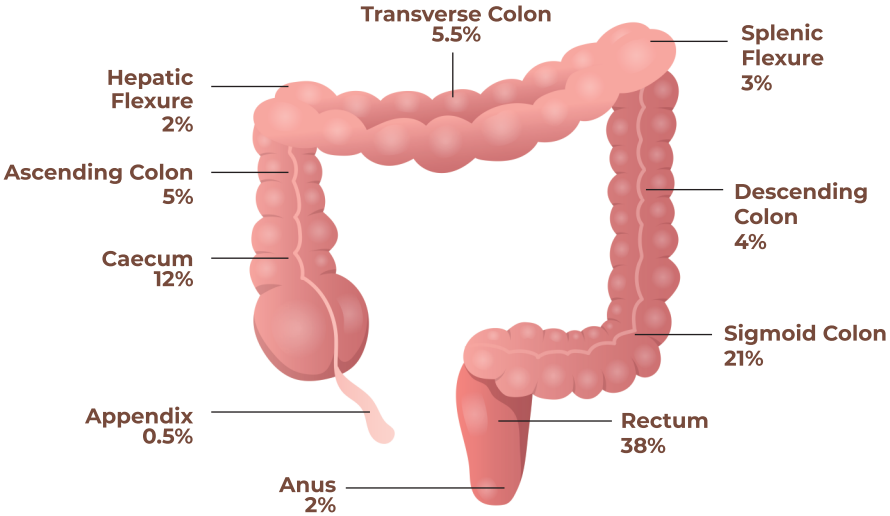
Worldwide colorectal cancer (CRC) is the third most common cancer in men and the second most common cancer in women. Almost 55% of the cases occur in developed countries. There is wide geographical variation in the incidence across the world but the male to female pattern is similar. In the Indian scenario colorectal cancer stands fourth in men and third in women in respect to incidence and mortality rates.

Mortality due to CRC is higher in the underdeveloped than in the developed countries, probably because of a lack of awareness regarding the disease because of which patients present in more advanced stages. A less advanced health care system adds to the problem. Overall the incidence of CRC is relatively low in India, probably because of a significantly higher fibre intake and healthier lifestyle.

Colon and rectum cancer is most frequently diagnosed among people aged 65-74 (median age 68), though of late a trend towards lower age groups has been observed.

In western world colon cancer is slightly more common than rectal cancer, but in India rectal cancer is more common. Men are more commonly affected than women.

Colorectal cancers usually starts in the innermost layer (mucosa) and can grow through some or all of the tissue layers that make up the colon and rectum (submucosa, muscular and serosa).



Percentage Wise distribution of cancer in the large Intestine

SYMPTOMS

The common symptoms associated with CRC are:

1) Passage of blood in the stool.

2) Change in bowel habits e.g.- diarrhoea, increasing constipation or increasing requirement of laxatives and narrowing of the calibre of stool that lasts for few days/weeks/months.

3) Persistent abdominal or rectal pain.

4) Constant feeling that you need to have a bowel movement, which still persist after passing stool.

5)Weakness with decrease in appetite and significant amount of weight loss in few months.

Some of these symptoms are not specific and can be a result of other medical conditions, but awareness of the disease can certainly help in early diagnosis.

Rectal bleeding is most commonly caused by noncancerous conditions of the anorectal region such as hemorrhoids or fissures, but colorectal cancer can sometimes coexist with hemorrhoids specially in patients over 50 years of age.

So any new onset bleeding per rectum in this age group should not be neglected and should be thoroughly investigated.

RISK FACTORS

The main risk factors associated with Colorectal Cancer are genetic, environmental, lifestyle and diet. Colorectal cancer incidence rates are much lower in India than in western countries. The high incidence of CRC in the west has been attributed mainly to lifestyle factors like physical inactivity, smoking and dietary factors (a diet with high fat content and low in vegetable & fibre).

While the precise reason for the low incidence in India is unclear but a lower consumption of red & processed meat and a lower prevalence of obesity is believed to contribute.

Greater levels of physical activity in rural India and a diet rich in fibre, vegetables and pulses may be protective. About 25-30% of Indians are also vegetarians and this type of dietary pattern decreased exposure to meat and a greater intake of fiber than a western diet and may also be protective.

Other aspects of diet, such as the use of spices like turmeric, commonly used in South Asian cooking have been shown to have anti-carcinogenic effects. Body levels of vitamin D have been found to be low in patients of CRC. So a good vitamin D intake and calcium consumption of about 1-1.2 gm/' day has been advised. Low folate diet is a risk factor for development of CRC and adenoma, especially in habitual alcoholics. So food high in folate like wheat bran and spinach is advisable.

To summarise, risk factors for colorectal cancer include

1) Obesity,

2) Physical inactivity,

3) Smoking and alcohol consumption,

4) Diet low in fruits, vegetables and fibers

5) Diet high in red and processed meat.

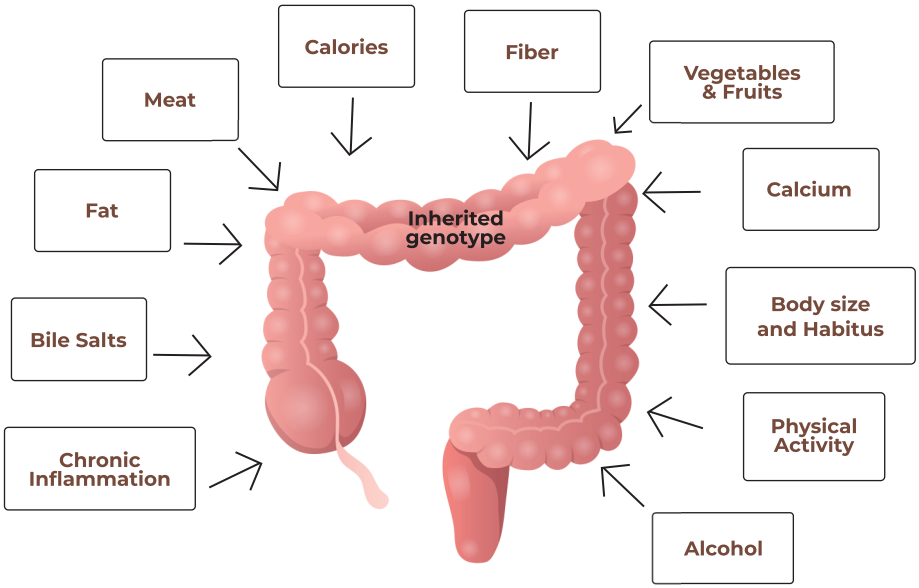
Hereditary risk factors

There are certain genetic syndromes which carry a high risk for colorectal cancer. The three main ones are:

1) Hereditary non polyposis colon cancer

2) Familial adenomatous polyposis

3) Inflammatory bowel disease



Main factors implicated in CRC

Significant association of alcohol intake with both colon cancer and rectal cancer has been found in several studies. Smoking has also been associated with a higher incidence of colorectal cancer compared non-smokers.

Is Colorectal cancer preventable and can the risk be decreased ?

- YES !!!

Colorectal cancer risk can be decreased by appropriate lifestyle and dietary changes.

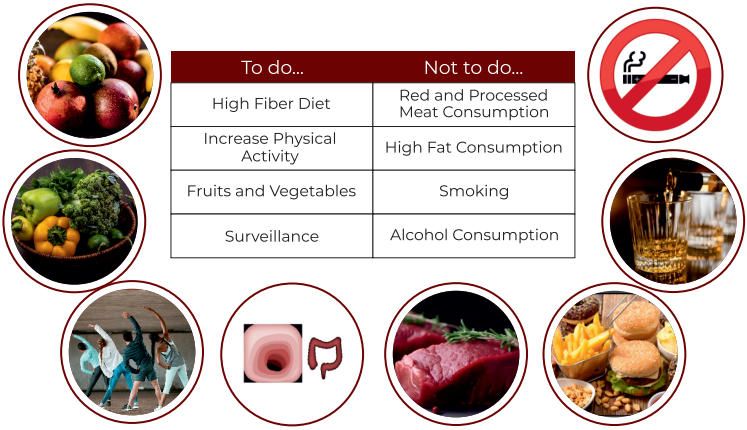
1) High fibre diet

2) Reduced processed meat

3) Increased physical activity

4) Reducing smoking and alcohol consumption

5) Decreased consumption of fats



To do...	Not to do...
High Fiber Diet	Red and Processed Meat Consumption
Increase Physical Activity	High Fat Consumption
Fruits and Vegetables	Smoking
Surveillance	Alcohol Consumption

COLORECTAL CANCER SCREENING & SURVEILLANCE OF AT RISK POPULATION

Screening helps in the early detection and treatment of cancers.

US Preventive Services Task Force recommends screening of all individuals between the age of 50 and 75 years for CRC. There is further stratification of screening program to address the population groups.

Increased risk

- Individual with colorectal adenoma(s) who have undergone polypectomy.
- Individuals with colorectal cancers who have undergone curative resection.
- One first degree relative having colorectal cancer or adenoma before 60 years of age or two first degree relative having colorectal cancer or adenomas at any age.

High risk

- Family history of Familial Adenomatous Polyposis (FAP) and Hereditary Non-Polyposis Colon Cancers (HNPCC).
- Personal history of Ulcerative colitis and Crohn's disease.

Average risk

- Those who are not included in the last two groups (between the ages of 50 years to 75 years).

Screening tests for average risk groups

FOBT (Fecal Occult Blood Test)

It should be done annually. This laboratory test is used to look for blood in the stool. The patient is asked to follow a special diet and then bring in his/her stool samples on three successive days. Any microscopic evidence of blood In stools in an otherwise healthy person above the age of 50 years should be considered suspicious.

Flexible Sigmoidoscopy

It should be done every 5 years after the age of 50. This examination is similar to the colonoscopy examination, but it uses a shorter length camera scope to inspect the lower colon and rectum.

Colonoscopy

Positive FOBT and sigmoidoscopy should be followed up with a full colonoscopy, otherwise it can be done independently every 10 years. This examination allows the physician to inspect the large intestine using a thin flexible camera scope that has a light on the end. It is inserted into the rectum while the patient lies on his/her side. It is often done under mild sedation for patient's comfort. Any polyps or other lesions that are found during this examination is usually removed at the same time and sent for pathological examination.

Virtual Colonoscopy

Virtual colonoscopy is a new technique that uses CT scans to produces a 3-D image for evaluation of the colon. But currently it is still a research tool and is not widely available. It is also important to note that, it is only a diagnostic technique, and does not allow to take biopsy or polyp removal at the same time if any abnormality is found.

Chromoendoscopy

This new Investigation modality incorporates the use of dyes during endoscopy to better study the mucosal patterns. The at risk mucosa can be studied and any suspicious area can be biopsied for definitive diagnosis.

Screening for Increased risk groups

Individual with personal history of Colorectal cancer

1. First colonoscopy at one year.
2. If colon was not evaluated pre-operatively, colonoscopy 3 month after the surgery.
3. If colonoscopy does not reveal any abnormality it can be repeated after 3 years and thereafter every 5 years.
4. If the colonoscopy shows some abnormality it has to be evaluated in detail.
5. In case of family history of colorectal carcinoma, screening should start at 40 years of age or 10 years earlier than the youngest affected family member.

What should one do if colorectal cancer is suspected ?

In case of any suspicion, consult a surgeon at the earliest. He will assess your symptoms and do a rectal examination. If necessary other investigations to arrive at a definitive diagnosis will need to be done. In case a non-cancerous cause for the symptoms is detected it also would have been diagnosed early and can be treated suitably, by non-surgical or surgical treatment.

The preliminary investigation required is usually a colonoscopy. It is an investigation that requires a long fibreoptic cable to be inserted into the large intestine through the anus. The large intestine is then completely visualised and any abnormality is noted. If any lesion suspicious of cancer is identified it is biopsied. The biopsy specimen is then subjected to histopathological (pathological) examination for a definitive diagnosis of the disease.

What further investigations are required ?

If a definitive diagnosis of colorectal cancer has been made, some additional investigations will be required to determine the extent of the disease i.e, whether it is a localised or widespread disease, a process known as "staging". Staging is very important as it tells us how advanced the disease is, so that further treatment can be planned accordingly. The following set of tests are routinely performed to stage colorectal cancer:

Computed tomography (CT) and Magnetic resonance imaging (MRI) scans, are used to see whether the cancer is limited or has spread to other organs, such as involvement of surrounding organs or distant organs like liver and lungs.

CEA (Carcino Embryogenic Antigen), is a kind of protein that acts as a marker for colorectal cancer and is increased in advanced cancer i.e. it's high level predict poor results. This is done as a simple blood test.

Positron-emission tomography (PET) scanning, is a test done to detect the distant spread of the disease. It also assesses the activity of the tumour, which is important when treatment with chemotherapy is given.

Endo-rectal ultrasound (ERUS) uses ultrasound probe to produce a two-dimensional image of the tumor; it involves placing a probe in the rectum to see how far a cancer has invaded the rectal wall. This procedure is used for staging rectal cancer.

Importance of Staging

Staging is a process where the extent of spread of the tumour is categorised. Its importance lies in the fact that the more advanced the tumour, more will be its stage. The most common method of staging is the AJCC staging system, which categorises the tumour based of the extent of local spread (T), nodal involvement (N) and distant spread/ metastasis (M). 39% of colorectal cancers present as localised disease, 36% present involving the regional lymph nodes and 20% with metastatic disease.

The 5year survival in these patients ranges from 90% in those with localised disease to 13% in those with distant disease.

Treatment of Colorectal cancer

The choice of treatment for colorectal cancer depends on the stage of the disease at presentation i.e, how large the tumor has grown, how deeply it has invaded the layers of the colon or rectum, and whether it has spread to other organs like liver, lungs or some other part of the body.

Treatment options include :

1) Surgery

2) Radiation therapy

3) Chemotherapy

4) Hormonal and biological therapy

5 Local ablative therapy

6) Combinations of these approaches

Surgery

Surgery forms the mainstay of treatment for colorectal cancer. It is considered curative for cancers which are localised i.e, limited to the colon or rectum. It involves completely removing the tumour from the body. To attain complete removal of the tumour, it has to be removed with an adequate margin in all directions. This means removing the tumour with

a rim of normal tissue. There are various operations that can be performed depending on the location and stage of the disease.

Tumours located in the colon undergo either a right or left hemicolectomy depending upon the location. Those located in the sigmoid colon undergo a sigmoid colectomy with adequate margins. In case of tumours in the rectum the surgery may involve preservation on the normal passage for stool (Anterior Resection) and after removing the rectum an anastomoses (joint) is made between colon and the anal canal. If the tumour is very close to the anal opening the normal passage may need to be removed (abdominoperineal resection). In such cases a new permanent outlet for stool may need to be made on the abdominal wall. This is referred to as a stoma (Colostomy – from the colon). Sometimes when an anterior resection is done to protect the delicate anastomoses between the colon and the anal canal a temporary stoma is made. This may be from the colon (colostomy) or from the small intestine (ileostomy). Once the anastomoses has healed the stoma is closed – usually after a gap of 4 to 6 weeks.

A stoma is not something to be afraid of. If properly created and its care taught to the patient, it can be very easy to manage. A person can go about his daily routine with the stoma in situ, with certain precautions. There are designated stoma care nurses who handle and teach the patient about the stoma care.

Open Vs Laparoscopic Vs Robotic Surgery

Various approaches to perform these surgical procedures have been used i.e, open techniques, laparoscopy, robotic etc. Irrespective of the method used the aim of the surgery is to remove all gross disease. The surgery can either be done by the conventional open method or using minimal access techniques.

Open surgery is the age old method where the abdomen is opened and the resection is performed under direct visualisation.

Minimal access surgery includes laparoscopic and robotic techniques. It is so called because the procedure is done by inserting instruments in the abdomen from small holes that are less than 12 mm in diameter. The instruments are inserted through these small ports and the visualisation is done on a screen.

Robotic surgery also works on the similar principles as laparoscopic surgery. The major difference being that the movements done by the surgeon on a console are reproduced by the robotic arms on the patient. It is a new technology that has rapidly gained popularity. Robotic surgery allows for better access to deep areas in the abdomen, such as the pelvis. The advanced instrumentation has significantly better ergonomics and mobility in 360 degrees like the wrist of the human hand.

Additionally, it offers a view that is magnified by 25 times. Numerous studies have shown that not only is robotic surgery safe, it allows for equally good cancer clearance. Patient recovery after robotic surgery is faster with much less pain and the hospital stay is shorter.

Non Surgical Management

If the tumour has spread to other organs, and it has been found that it can be removed safely, surgery is attempted. If the tumor seems to be beyond surgical treatment i.e, surgery may not be able to completely remove the tumor or the extent of surgery may cause more disability than acceptable, then other modalities of treatment are used.

Neo-adjuvant treatment: In a few cases where the tumour is relatively large or locally advanced, surgery as the primary mode of treatment may not be advisable. In such cases the patient should first receive non-surgical therapy to reduce the size of the tumour and bring it within the confines of surgery. This modality of treatment prior to surgery is called **Neoadjuvant therapy.** This may not be helpful in all cases, but is a valuable tool in increasing the chances for a complete cure in some patients.

Chemotherapy involves the administration of drugs which specially act against the tumour cells. These drugs help kill the tumour cells and thus reduce the size and spread of the tumour. It can either be given before surgery or as an alternative to it, if it is deemed that the turnour is too extensive for surgical removal.

If given prior to surgery it helps to reduce the tumour size and thus may help in converting a few unresectable cases into resectable ones.

Radiotherapy involves treating the cancer cells with radiation. This can be done either prior to surgery, during the surgery or after the surgery depending on the stage of the tumour. It is usually given concurrent with chemotherapy to help improve its potency.

The patient is kept under a post treatment surveillance program. This involves periodic check up with the physician where a complete account of his history and physical examination is assessed. Routine blood and radiological investigations are repeated at 3-6 months interval initially which later increases

to yearly intervals. Colonoscopy is ideally done yearly for the first few years. CT of the chest and abdomen also needs to be done yearly for the first 5 years. These guidelines are based on the fact that most of the recurrences occur in the initial 5 years after the treatment. If recurrent disease is detected early then appropriate treatment can be given and survival can be increased.

CONCLUSION

Colorectal cancer is a curable malignancy.

This is possible only if early diagnosis is made and treatment is initiated at the earliest.

A keen eye towards the onset of symptoms can help in detecting the cancer early and extending the possibility of a long cancer free life.

Certain lifestyle modifications can help decrease the chances of having colorectal cancer.

Fig: Final look of the abdomen after surgery

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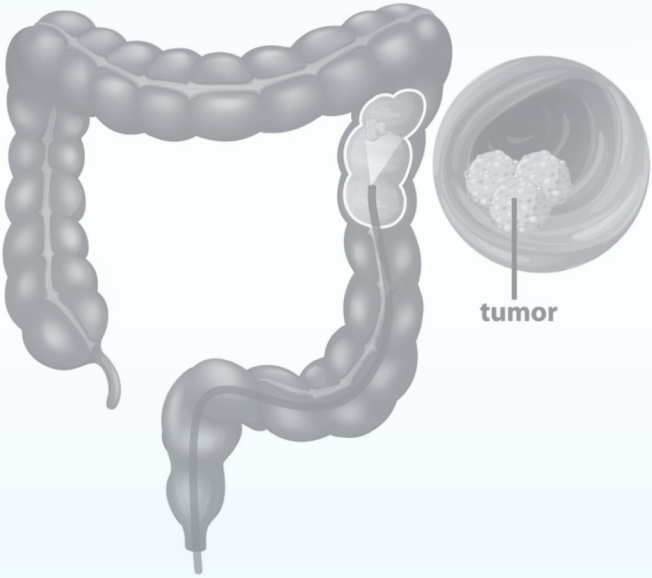
DIGESTIVE DISEASE FOUNDATION



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