

Cancer Association of South Africa (CANSA)

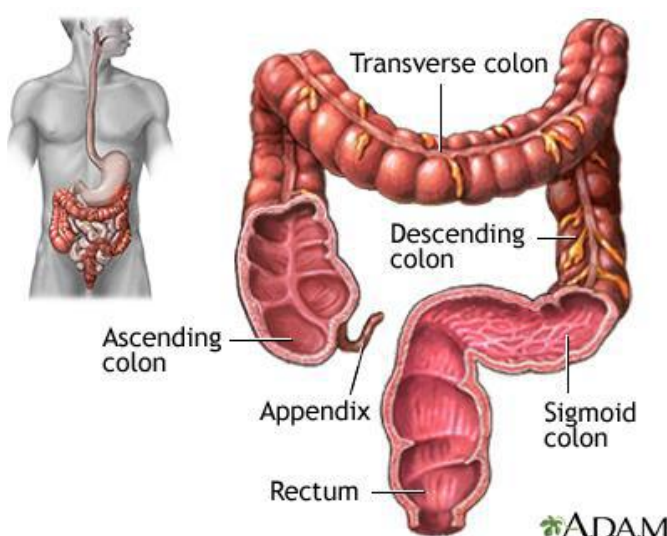


CANSA Fact Sheet on Colorectal Cancer

Introduction

Colorectal cancer is cancer that occurs in the colon and rectum. Sometimes it is called colon cancer, for short. The colon is also known as the large intestine or large bowel. The rectum is the passageway that connects the colon to the anus.

[Picture Credit: Anatomy Colon]



Colorectal Cancer

Cancers of the colon and rectum (colorectal cancer) start when the process of the normal replacement of lining cells goes awry. Mistakes in mucosal cell division occur frequently. For reasons that are poorly understood, sometimes mistakes occur that escape our editing systems. When this occurs, these cells begin to divide independently of the normal checks and balances that control growth. As these abnormal cells grow and divide, they can lead to growths within the colon called polyps. Polyps vary in type, but many are precancerous tumours that grow slowly over the course of years and do not spread. As polyps grow, additional genetic mutations further destabilize the cells and can make the cells more bizarre. When these precancerous tumours change direction (growing through the tube rather than into the middle of it) and invade other layers of the large intestine (such as the submucosa or muscular layer), the precancerous polyp has become cancerous. In most cases this process is slow, taking at least 8 to 10 years to develop from those early aberrant cells to a frank cancer.

Wu, D., Song, Q.Y., Dai, B.S., Li, J., Wang, X.X., Liu, J.Y. & Xie, T.Y. 2025.

"Colorectal cancer (CRC) is a prevalent malignancy worldwide, posing a significant public health concern. Mounting evidence has confirmed that timely early screening facilitates the detection of incipient CRC, thereby enhancing patient prognosis. Obviously, non-participation of asymptomatic individuals in screening programs hampers early diagnosis and may adversely affect long-term outcomes for CRC patients. In this letter, we provide a comprehensive overview of the current status of early screening practices, while also thoroughly examine the dilemmas and potential solutions associated with early screening for CRC. In response to these issues, we proffer a set of recommendations directed at governmental authorities and the general public, which focus on

Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Diagnostic Radiographer; Dip audiometry and Noise Measurement; Medical Ethicist]

Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]

May 2025

Page 1

augmenting financial investment, establishing standardized screening protocols, advancing technological capabilities, and bolstering public awareness campaigns. The importance of collaborative efforts from various stakeholders cannot be overstated in the quest to enhance early detection rates and alleviate the societal burden of CRC.”

Conflict of interest statement

The authors declare that they have no conflict of interest.

Mauri, G., Patelli, G., Crisafulli, G., Siena, S. & Bardelli, A. 2025.

“The incidence of early-onset colorectal cancer (EO-CRC) is surging, and by 2030, one-third of all CRCs will occur before the commonly recommended screening age of 50 years. The time required for EO-CRC to reach the metastatic stage is unknown, yet this knowledge is critical to tailor early-diagnosis screening strategies. Here, we discuss how defining a key biological feature of EO-CRC may be central to protecting young adults from an alarming and probably unprecedented tumor epidemic.”

Conflict of interest statement

Declaration of interests A.B. reports receipt of grants/research support from Neophore, AstraZeneca, and Boehringer Ingelheim and honoraria/consultation fees from Guardant Health. A.B. is a stock shareholder of Neophore and Kither Biotech. A.B. is an advisory board member for Neophore. S.S. is an advisory board member for Agenus, AstraZeneca, Bayer, Bristol Myers Squibb, CheckmAb, Daiichi-Sankyo, GlaxoSmithKline, MSD, Merck, Novartis, Pierre-Fabre, Seagen, and T-One Therapeutics.

The International Classification of Diseases 10th version (ICD-10)

The International Classification of Diseases (ICD) is designed to promote international comparability in the collection, processing, classification, and presentation of mortality statistics. This includes providing a format for reporting causes of death on the death certificate.

ICD serves a broad range of uses globally and provides critical knowledge on the extent, causes and consequences of human disease and death worldwide via data that is reported and coded with the ICD. Clinical terms coded with ICD are the main basis for health recording and statistics on disease in primary, secondary and tertiary care, as well as on cause of death certificates. These data and statistics support payment systems, service planning, administration of quality and safety, and health services research. Diagnostic guidance linked to categories of ICD also standardizes data collection and enables large scale research.

For more than a century, the International Classification of Diseases (ICD) has been the basis for comparable statistics on causes of mortality and morbidity between places and over time. Originating in the 19th century, the latest version of the ICD, ICD-11, was adopted by the 72nd World Health Assembly in 2019 and came into effect on 1st January 2022.

The ICD-10 Code for malignant neoplasm of overlapping sites of colon is C18.8

The ICD-10 code of malignant neoplasm of colon, unspecified, is 18.9

The ICD-10 code for malignant neoplasm of rectosigmoid junction is C18

The ICD-10 code of malignant neoplasm of the rectum is c20

Incidence of Colorectal Cancer in South Africa

According to the latest edition of the National Cancer Registry (2023) the following cases of colorectal cancer was histologically diagnosed during 2023:

Group - Males 2023	Actual No of Cases	Estimated Lifetime Risk	Percentage of All Cancers
All males	2 496	1:83	5,98%
Asian males	172	1:44	15,73%
Black males	859	1:161	5,67%
Coloured males	358	1:57	7,10%
White males	1 107	1:36	5,30%

Group - Females 2023	Actual No of Cases	Estimated Lifetime Risk	Percentage of All Cancers
All females	2 184	1:136	4,73%
Asian females	145	1:79	9,88%
Black females	830	1:238	3,75%
Coloured females	342	1:94	6,70%
White females	867	1:53	4,89%

The frequency of histologically diagnosed cases of colorectal cancer in South Africa for 2023 was as follows (National Cancer Registry, 2023):

Group - Males 2023	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All males	6	31	131	266	510	738	592	2224
Asian males	0	2	8	13	42	61	40	6
Black males	5	20	75	133	213	257	141	25
Coloured males	1	2	17	35	82	111	83	27
White males	0	7	31	85	220	309	338	164

Group – Females 2023	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All females	8	23	110	270	485	540	494	254
Asian females	0	2	5	15	41	27	43	12
Black females	3	12	61	159	212	218	187	51
Coloured females	1	4	15	33	75	91	87	36
White females	4	5	29	63	157	204	250	155

N.B. In the event that the totals in any of the above tables do not tally, this may be the result of uncertainties as to the age, race or sex of the individual. The totals for 'all males' and 'all females', however, always reflect the correct totals.

Signs and Symptoms of Colorectal Cancer

Sign and Symptoms of colorectal cancer may include:

Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Diagnostic Radiographer; Dip audiology and Noise Measurement; Medical Ethicist]

Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]

May 2025

Page 3

- A change in bowel habits, including diarrhoea or constipation or a change in the consistency of stools
- Rectal bleeding or blood in stools
- Persistent abdominal discomfort, such as cramps, gas or pain
- A feeling that the bowel does not empty completely
- Weakness or fatigue
- Unexplained weight loss

Many people with colorectal cancer experience no symptoms in the early stages of the disease. When appearing, symptoms will likely vary, depending on the cancer's size and location in the large intestine.

Diarrhoea and Metformin

Type 2 diabetes is a common problem among many individuals worldwide and Metformin is a prescription drug for type 2 Diabetes. It belongs to a class of medications called biguanides. Metformin does not cure Type 2 Diabetes. Instead, it helps lower your blood sugar levels into a safe range.

Common side effects of metformin include (among others):

- Heartburn
- Stomach discomfort
- Bloating
- Diarrhoea
- constipation

Individuals who suffer from Tye 2 Diabetes as a co-morbidity are to report to their treating physician that they are on Metformin so that they can be informed of how to take the Metformin and know that their change in bowel habits may be as a result of Metformin.

Risk Factors for Colorectal Cancer

Risk factors for colorectal cancer may include:

- Previous radiation therapy for cervical cancer
- Advancing age - national and international data indicate that the risk of developing colorectal cancer increases with advancing age. Most cases of colorectal cancer occur in people aged 50 or older.
- Family or personal history
 - A family history of inherited colorectal cancer syndromes, such as familial adenomatous polyposis (FAP) or hereditary non-polyposis colorectal cancer (HNPCC or Lynch syndrome)
 - A strong family history of colorectal cancer or polyps. This usually means first-degree relatives (parent, sibling, or child) who developed these conditions younger than age 60
 - A personal history of colorectal cancer or polyps
 - A personal history of chronic inflammatory bowel disease (for example, ulcerative colitis or Crohn's disease)

Lifestyle Factors that May Contribute to the Increased Risk for Colorectal Cancer:

Lifestyle factors that may contribute to the increased risk of colorectal cancer include:

- Lack of regular physical activity
- Being overweight including obesity
- Low fruit and vegetable intake
- A low-fibre and high-fat and high sugar diet
- Red meat consumption
- Consuming processed meats
- Alcohol consumption
- Tobacco use

Lifestyle Factors that Play an Important Role in Reducing the Risk for Colorectal Cancer

The following are of importance:

- Fibre – research suggests that fibre (found mostly in fruit, vegetables and whole grain products and cereals) is likely to reduce the risk for bowel cancer
- Fruit and vegetables – the large European Prospective Investigation into Cancer and Nutrition (EPIC) study has shown that people who eat a lot of fruit and vegetables have a lower risk for colorectal cancer
- Meat – eating a lot of red meat, particularly processed meat, increases one's risk for colorectal cancer
- Fish – eating more fish high in Omega-3 lowers one's risk for colorectal cancer
- Calcium – calcium rich diets may lower the risk of colorectal cancer
- Alcohol – alcohol has been classified as a Group 1 carcinogen by the International Agency for Research on Cancer (IARC) and should be avoided to reduce the risk of colorectal cancer
- Tobacco - people who use tobacco products have an increased risk of colorectal cancer and cancer in general. Smoking is a well-known cause of lung cancer, but some of the cancer-causing substances in smoke dissolve into saliva and if swallowed, can cause digestive system cancers like colorectal cancer
- Processed meats (like sausages, luncheon meats inclusive of ham and even biltong) can increase the risk for colorectal cancer based on the use of nitrate and nitrites
- Cooking meats at very high temperatures (frying, broiling, or grilling) creates chemicals that increase cancer risk, namely Heterocyclic Amines (HCAs)
- Body weight – being overweight increases the risk of developing and dying from colorectal cancer. Obesity raises the risk of colorectal cancer in both men and women, but the link seems to be stronger in men
- Physical inactivity - increases the risk of developing colorectal cancer - increasing activity may help reduce the risk
- Radiation therapy for cancer - radiation therapy directed at the abdomen to treat previous cancers may increase the risk of colorectal cancer

Screening for Higher Risk Individuals

People with familial risk factors for colorectal cancer may need earlier (before age 50) or more frequent testing. Genetic testing in suspected familial cases may identify candidates for secondary prevention. Screening for high risk individuals is more likely to be done using colonoscopy.

Testing for occult blood in the stool (faeces)

Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Diagnostic Radiographer; Dip audiology and Noise Measurement; Medical Ethicist]

Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]

May 2025

Page 5

When a health care provider tests stool with a faecal occult blood test they are often looking for the presence of microscopic occult blood in the faeces, which may be a sign of a growth, inflammation or bleeding in the digestive system.

Causes of Blood in Stool

Blood may appear in the stool in one or more of the following conditions:

- Benign (non-cancerous) or malignant (cancerous) growths or polyps of the colon
- Haemorrhoids (swollen blood vessels near the anus and lower rectum that can rupture, causing bleeding)
- Anal fissures (splits or cracks in the lining of the anal opening)
- Intestinal infections that cause inflammation
- Ulcers
- Ulcerative colitis
- Crohn's disease
- Diverticular disease, caused by outpouchings of the wall of the large intestine
- Abnormalities of the blood vessels in the large intestine

Gastrointestinal bleeding may be microscopic (invisible to the eye) or may be easily seen as red blood or black tar-like bowel movements, called melaena stools indicating digested blood.

A Faecal Occult Blood Test - The faecal occult blood test requires the collection of 3 small stool samples. Usually the samples are a bit of stool collected on the end of an applicator. The stool samples should be taken one day apart, because colorectal cancers may bleed from time to time, rather than consistently.

Preparation before a Faecal Occult Blood Test - The faecal occult blood test results are largely affected by how one prepares for the test, so it is important to follow the instructions carefully.

Stool samples should NOT be collected from individuals:

- with haemorrhoids
- during or within 3 days either side of a menstrual period

As certain foods can alter the test results, a special diet is often recommended for 48 to 72 hours before the test. The following foods should be avoided during that time:

- | | |
|--|---|
| • Beets | • Grapefruit |
| • Broccoli | • Horseradish |
| • Spanspek (also cantaloupe, canteloupe, cantaloup, mushmelon, muskmelon, rockmelon, sweet melon, Persian melon) | • Mushrooms |
| • Carrots | • Poultry |
| • Cauliflower | • Radishes |
| • Cucumbers | • Red meat (especially 'rare' prepared) |
| • Fish | • Turnips |
| | • Vitamin C-enriched foods or beverages |

N.B. There are faecal occult blood tests (FOBT) available on the market that are not affected by dietary restrictions prior to collecting stool samples for screening. Enquire from the Cancer Association regarding availability of these occult blood tests.

Colostomy Care

Being diagnosed with cancer and having treatment takes time to come to terms with. It can also be difficult to cope with the physical effects of treatment. If a patient had a colostomy or ileostomy operation as part of treatment, the end of the bowel is brought out into an opening on the abdomen. The opening is referred to as a stoma. Some people have a temporary colostomy (an artificial opening into the colon) made during their treatment for bowel cancer. The colostomy may be closed a few months later when the bowel has fully healed.

Some people have a permanent colostomy or ileostomy (artificial opening into the ileum or small bowel). It can take a while to get used to dealing with a stoma. There is a lot of advice and support available in the form of a specially trained nurse referred to as a stoma nurse.

Emptying and Changing a Stoma Bag

It is good to establish a routine for changing a stoma bag. Keep this routine as simple as possible. As the stoma is more active at certain times of the day, like shortly after meals, bags should be changed at time when it is relatively inactive, like first thing in the morning.

Stoma bag needs to be changed regularly – usually between one and three times a day depending on the amount of faeces. If using a drainable bag, it is recommended to empty the bag before removing it. Then seal the bag inside a disposal bag and place in the dustbin. Do not flush it down the toilet, as it will cause a blockage.

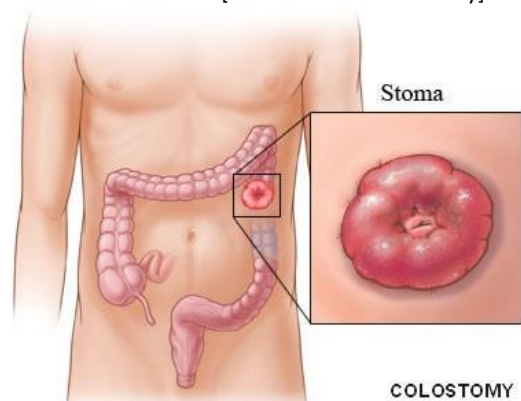
Taking Care of the Skin Around the Stoma is very important

Adhesive plate - The adhesive plate must fit snugly around the stoma. If the hole in the adhesive plate is larger than the stoma, the skin will become exposed to the harmful effects of the faeces and become irritated. Also, if the adhesive plate is cut too small, it may cause damage to the stoma. Check regularly to ensure the adhesive plate has a snug fit around the stoma.

Watch out for irritants - Leakage on to the skin, excessive removal of the adhesive plate and harsh skin cleansers can all cause irritation of the skin.

Bleeding - It is common to experience a small amount of bleeding around the stoma when cleaning it – no cause of alarm. If bleeding comes from inside the stoma, a doctor is to be contacted immediately.

[Picture Credit: Colostomy]



[Picture Credit: Colostomy Bag]



Diagnosis of Colorectal Cancer

Diagnosis of Colorectal Cancer may include:

- Obtaining a history from the patient
- A Physical examination
- A digital rectal examination
- The patient may then be referred for further

examination - if the diagnosis uncertain or if symptoms suggest colorectal cancer.

Possible further examination

Two tests may also be used to confirm a diagnosis of bowel cancer:

Sigmoidoscopy - a device called a sigmoidoscope is used, which is a thin, flexible tube attached to a small camera and light.

known as a biopsy

A sigmoidoscopy is not usually painful, but can feel uncomfortable; most people go home after the examination has been completed



[Picture Credit: Sigmoidoscope]



Colonoscopy – it is similar to a sigmoidoscopy except a longer tube, called a colonoscope, is used to examine the entire large bowel

[Picture Credit: Colonoscope]

Staging of Colorectal Cancer

Cancer staging is the process of determining the extent to which a cancer has developed by spreading. It also

assists in planning of treatment.

Where Colorectal Cancer May Spread To

Should colorectal cancer spread in the body, it may spread as indicated in the table below:

Cancer Type:	Main Sites of Metastasis (Spread)
Bladder	Bone, liver, lung
Breast	Bone, brain, liver, lung
Colon	Liver, lung
Colorectal	Liver, lung, peritoneum (lining of abdomen)
Lung	Adrenal gland, bone, brain, liver, other lung
Melanoma	Bone, brain, liver, lung, skin, muscle
Ovary	Liver, lung, peritoneum (lining of abdomen)
Pancreas	Liver lung, peritoneum (lining of abdomen)
Prostate	Adrenal gland, bone, liver, lung

Treatment for Colorectal Cancer

Most people with early colorectal cancer may have surgery.

Surgery - In many people with early bowel cancer the surgeon is able to cut away all of the cancer without any further treatment required.

There are different types of surgery for colorectal cancer. Which type of surgery is best will depend on where the cancer is, its type and size, and whether it has spread (metastasised) or not. If the cancer is removed from the bowel lining it is called a local resection.

Radiotherapy - Radiotherapy is not often used to treat cancer of the large bowel. It might be used before or after surgery for rectal cancer. It may include:

- External beam radiation therapy – radiation therapy from an external source
- Internal radiation therapy (also known as brachytherapy) where radioactive material is put into the rectum, and positioned close to the tumour. It is left in place for a predetermined period of time.

Chemotherapy - Chemotherapy uses anti-cancer (cytotoxic) drugs to destroy cancer cells. It works by disrupting the growth of cancer cells. As it circulates in the blood, it can reach cancer cells almost anywhere in the body and kill them. Chemotherapy may be given before surgery for rectal cancer. Chemotherapy may also given as a treatment for colorectal cancer that has spread (metastasised).

Biological Therapy - biological therapies are drugs that help the body to control the growth of cancer cells.

Immunotherapy - Current immunotherapies for colorectal cancer fall into several broad categories: checkpoint inhibitors and immune modulators, monoclonal antibodies, therapeutic vaccines, adoptive cell therapy, oncolytic virus therapy, adjuvant immunotherapies, and cytokines. Most of these therapies are still in early-phase clinical testing for colorectal cancer, but their successful use in other types of cancers suggests that they may ultimately prove useful for colorectal cancer as well.

Treatment for Advanced Colorectal Cancer

Advanced colorectal cancer means the cancer has spread to other parts of the body from where it started in the bowel (colon) or back passage (rectum). The cancer may be advanced when it is first diagnosed, or the cancer may recur some time after original treatment.

Chemotherapy and radiotherapy may be used to shrink a cancer and control symptoms. Surgery can be used in some situations to treat advanced colorectal cancer.

Specialised surgical treatments may be used to destroy bowel cancer that has spread to the liver (liver secondaries). These treatments may include hepatic artery chemoembolisation, radiofrequency ablation, cryotherapy, microwave ablation and laser therapy.

About Clinical Trials

Clinical trials are research studies that involve people. They are conducted under controlled conditions. Only about 10% of all drugs started in human clinical trials become an approved drug.

Clinical trials include:

- Trials to test effectiveness of new treatments
- Trials to test new ways of using current treatments
- Tests new interventions that may lower the risk of developing certain types of cancers
- Tests to find new ways of screening for cancer

The [South African National Clinical Trials Register](https://pactr.samrc.ac.za/) provides the public with updated information on clinical trials on human participants being conducted in South Africa. The Register provides information on the purpose of the clinical trial; who can participate, where the trial is located, and contact details.

For additional information, please visit: <https://pactr.samrc.ac.za/>

Medical Disclaimer

This Fact Sheet is intended to provide general information only and, as such, should not be considered as a substitute for advice, medically or otherwise, covering any specific situation. Users should seek appropriate advice before taking or refraining from taking any action in reliance on any information contained in this Fact Sheet. So far as permissible by law, the Cancer Association of South Africa (CANSA) does not accept any liability to any person (or his/her dependants/ estate/heirs) relating to the use of any information contained in this Fact Sheet.

Whilst CANSA has taken every precaution in compiling this Fact Sheet, neither it, nor any contributor(s) to this Fact Sheet can be held responsible for any action (or the lack thereof) taken by any person or organisation wherever they shall be based, as a result, direct or otherwise, of information contained in, or accessed through, this Fact Sheet.



Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Diagnostic Radiographer; Dip audiology and Noise Measurement; Medical Ethicist]

Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]

May 2025

Page 10

Sources and References Consulted or Utilised

Akagi, R. & Inomata, M. 2020. Essential advances in surgical and adjuvant therapies for colorectal cancer 2018-2019. *Ann Gastroenterol Surg.* 2020 Jan 28;4(1):39-46. doi: 10.1002/ags3.12307. eCollection 2020 Jan.

Al-Ghafari, A.B., Balamash, K.S. & Al Doghaither, H.A. 2019. Relationship between serum Vitamin D and Calcium levels and Vitamin D receptor gene polymorphisms in colorectal cancer. *Biomed Res Int.* 2019 Aug 26;2019:8571541. doi: 10.1155/2019/8571541. eCollection 2019.

American Cancer Society

<http://www.cancer.org/cancer/colonandrectumcancer/detailedguide/colorectal-cancer-risk-factors>

<http://www.cancer.org/cancer/colonandrectumcancer/detailedguide/colorectal-cancer-staged>

<https://www.cancer.org/latest-news/six-ways-to-lower-your-risk-for-colon-cancer.html>

Anatomy Colon

<http://www.nlm.nih.gov/medlineplus/ency/article/000262.htm>

Azzam, N., AlRuthia, Y., Alharbi, O., Aljebreen, A., Almadi, M., Alarfaj, M., Alsaleh, K., Almasoud, A., Alsharidah, M., Alseneidi, S., Alali, F. & Alalwan, M. 2020 Predictors of survival among colorectal cancer patients in a low incidence area. *Cancer Manag Res.* 2020 Jan 21;12:451-459. doi: 10.2147/CMAR.S233215. eCollection 2020.

Barreiro Dominguez, E., Sánchez Santos, R., Diz Juengu;en, S., Piñeiro, Teijeiro, A. & Carrera Dacosta, E. 2019. Impact of preoperative oral nutrition therapy in patients undergoing surgery for colorectal cancer. *Utr Hosp.* 2019 Sep 23. doi: 10.20960/nh.02548. [Epub ahead of print]

Biller, L.H. & Schrag, D. 2021. Diagnosis and treatment of metastatic colorectal cancer: a review. *JAMA.* 2021 Feb 16;325(7):669-685.

Botma, A., et al. 2012. Dietary patterns and colorectal adenomas in Lynch syndrome. *Cancer*, 2012.

Bruni, L., Albero, G., Serrano, B., Mena, M., Gómez, D., Muñoz, J., Bosch, F.X. & de Sanjosé, S. 2019. ICO/IARC Information Centre on HPV and Cancer (*HPV Information Centre*). Human Papillomavirus and Related Diseases in South Africa. Summary Report 17 June 2019. [Date Accessed]

Cancer Research Institute

<http://www.cancerresearch.org/cancer-immunotherapy/impacting-all-cancers/colorectal-cancer>

Cancer Research UK

About Bowel Cancer - A Quick Guide

Treating Bowel Cancer - A Quick Guide

<http://www.cancerresearchuk.org/cancer-help/type/bowel-cancer/about/screening/about-bowel-cancer-screening>

<http://www.cancerresearchuk.org/cancer-help/type/bowel-cancer/living/coping-with-a-stoma-after-bowel-cancer>

Carethers, .M. 2010. Secondary prevention of colorectal cancer: is there an optimal follow-up for patients with colorectal cancer?

<http://www.escholarship.org/uc/item/4wp3r2t0>

Centers for Disease Control and Prevention

http://www.cdc.gov/cancer/colorectal/basic_info/screening/guidelines.htm

Chan, A.T. & Giovannucci, E.L. 2010. Primary prevention of colorectal cancer. Gastrointestinal Unit, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA. achan@partners.org achan@partners.org. *Gastroenterology.* 2010 Jun;138(6):2029-2043.e10. doi: 10.1053/j.gastro.2010.01.057.

Coloplast

<http://www.coloplast.com/ostomy/ostomycare/topics/beforeoperation/usingthebag/>

Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Diagnostic Radiographer; Dip audiometry and Noise Measurement; Medical Ethicist]

Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]

May 2025

Colonoscope

[http://www.google.co.za/imgres?q=free+pics+colonoscope&start=0&hl=en&sa=N&tbo=d&rlz=1G1LEN-GBZA513&biw=1821&bih=817&tbm=isch&tbnid=Kygm4nJi_SapjM:&imgrefurl=http://www.dotmed.com/listing/colonoscope/olympus/video-colonoscopy-cf-q160i-evis-exera-free-shipping/1161686&dclid=UzDv7F8-0l1qM&itg=1&imgurl=http://images.dotmed.com/images/listingpics/1161686.jpg&w=470&h=353&ei=9ybHULCLKq_Z0QXonYDACA&zoom=1&iact=hc&vpx=376&vpy=131&dur=188&hovh=194&hovw=259&tx=153&ty=105&sig=109572939590628860228&page=1&tbnh=149&tbnw=199&ndsp=51&ved=1t:429,r:2,s:0,i:89\]](http://www.google.co.za/imgres?q=free+pics+colonoscope&start=0&hl=en&sa=N&tbo=d&rlz=1G1LEN-GBZA513&biw=1821&bih=817&tbm=isch&tbnid=Kygm4nJi_SapjM:&imgrefurl=http://www.dotmed.com/listing/colonoscope/olympus/video-colonoscopy-cf-q160i-evis-exera-free-shipping/1161686&dclid=UzDv7F8-0l1qM&itg=1&imgurl=http://images.dotmed.com/images/listingpics/1161686.jpg&w=470&h=353&ei=9ybHULCLKq_Z0QXonYDACA&zoom=1&iact=hc&vpx=376&vpy=131&dur=188&hovh=194&hovw=259&tx=153&ty=105&sig=109572939590628860228&page=1&tbnh=149&tbnw=199&ndsp=51&ved=1t:429,r:2,s:0,i:89])

Colostomy

[http://www.google.co.za/search?q=colostomy+pic&hl=en&tbo=u&rlz=1G1LENN_EN-GBZA513&tbm=isch&source=univ&sa=X&ei=EegZUcTnI8qp0AXmulDwBw&ved=0CCsQsAQ&biw=1821&bih=817\]](http://www.google.co.za/search?q=colostomy+pic&hl=en&tbo=u&rlz=1G1LENN_EN-GBZA513&tbm=isch&source=univ&sa=X&ei=EegZUcTnI8qp0AXmulDwBw&ved=0CCsQsAQ&biw=1821&bih=817])

Colostomy Bag

[http://www.google.co.za/search?q=colostomy+pic&hl=en&tbo=u&rlz=1G1LENN_EN-GBZA513&tbm=isch&source=univ&sa=X&ei=EegZUcTnI8qp0AXmulDwBw&ved=0CCsQsAQ&biw=1821&bih=817\]](http://www.google.co.za/search?q=colostomy+pic&hl=en&tbo=u&rlz=1G1LENN_EN-GBZA513&tbm=isch&source=univ&sa=X&ei=EegZUcTnI8qp0AXmulDwBw&ved=0CCsQsAQ&biw=1821&bih=817])

Coupez, D., Hulo, P., Touchefeu, Y., Bossard, C. & Bennouna, J. 2020. Pembrolizumab for the treatment of colorectal cancer. *Expert Opin Biol Ther.* 2020 Mar;20(3):219-226.

Curry, S., Byers, T., & Hewitt, M., (eds). 2003. *Fulfilling the Potential of Cancer Prevention and early Detection.* Washington, DC: National Academies Press.

Department of Health and Human Services. The health consequences of smoking: a report of the Surgeon General. Atlanta, Ga.: Dept. of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; Washington, D.C.

Ding, D., Han, S., Zhang, H., He, Y. & Li, Y. 2019. Predictive biomarkers of colorectal cancer. *Comput Biol Chem.* 2019 Sep 3;83:107106. doi: 10.1016/j.compbiolchem.2019.107106. [Epub ahead of print]

Eng, C., Jácome, A.A., Agarwal, R., Hayat, M.H., Byndloss, M.X., Holowatyj, A.N., Bailey, C. & Lieu, C.H. 2022. A comprehensive framework for early-onset colorectal cancer research. *Lancet Oncol.* 2022 Mar;23(3):e116-e128.

Fruit and Vegetables

https://www.google.co.za/search?q=eat+a+variety+of+foods+everyday&source=lnms&tbm=isch&sa=X&ei=p8TSUZ-tlZOFhQfaoGgDg&ved=0CAcQ_AUoAQ&biw=942&bih=464#facrc=_&imgdii=_&imgsrc=zNVsnv3FU24P4M%3A%3BMklI0x-AptLCyM%3Bhttp%253A%252F%252Fwww.supersprout.com.au%252Fblog%252Fwp-content%252Fuploads%252F2013%252F04%252Frainbow-of-food1-300x288.png%3Bhttp%253A%252F%252Fwww.supersprout.com.au%252Fblog%252F2013%252F04%252F24%252Ffeeding-nutritious-food-is-a-lifestyle-choice%252F%3B300%3B288

Globocan Cancer Observatory

<https://gco.iarc.fr/today>

Hou, S.I. & Chen, P.H. 2022. Home-administered fecal occult blood test for colorectal cancer screening among worksites in Taiwan. *Prev Med.* 2004 Jan;38(1):78-84.

Housini, M., Dariya, B., Ahmed, N., Stevens, A., Fiadjoe, H., Nagaraju, G.P. & Basha, R. 2024. Colorectal cancer: Genetic alterations, novel biomarkers, current therapeutic strategies and clinical trials. *Gene.* 2024 Jan 20;892:147857.

Howard, K. & Salkeld, G. 2022. Home bowel cancer tests and informed choice--is current information sufficient? *Aust N Z J Public Health.* 2003 Oct;27(5):513-6.

Hull, M.A. 2020. Nutritional prevention of colorectal cancer. *Proc Nutr Soc.* 2020 Feb 5:1-6. [Epub ahead of print]

Ileostomy

[http://www.google.co.za/search?q=ileostomy+pictures&hl=en&tbo=u&rlz=1G1LENN_EN-GBZA513&tbm=isch&source=univ&sa=X&ei=qegZUcTnI8qp0AXmulDwBw&ved=0CCsQsAQ&biw=1821&bih=817\]](http://www.google.co.za/search?q=ileostomy+pictures&hl=en&tbo=u&rlz=1G1LENN_EN-GBZA513&tbm=isch&source=univ&sa=X&ei=qegZUcTnI8qp0AXmulDwBw&ved=0CCsQsAQ&biw=1821&bih=817])

Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Diagnostic Radiographer; Dip audiology and Noise Measurement; Medical Ethicist]

Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]

May 2025

Page 12

International Classification of Diseases

[https://www.google.com/search?q=ICD-10+coding+system&rlz=1C1GCEA_enZA1014ZA1014&ei=u47PY7TLO4KA8gKii7-YDg&ved=0ahUKEwj0IM-d3d_8AhUCgFwKHaLFD-MQ4dUDCA8&uact=5&oq=ICD-10+coding+system&gs_lcp=Cgxnd3Mtd2l6LXNlcnAQAzIFCAAQgAQyBggAEByQHjIGCAAQFhAeMgYIABAWEB4yBggAEByQHjIGCAAQFhAeMggIABAWEB4QCjoKCAAQRxDWBBcwAzoECAAQZoFCAAQKQI6BQguEIAEOgkIABAWEB4Q8QRKBahBGABKBAhGGABQywpY6W5giYoBaAJwAHgBgAHYBYgBniKSAQwyLTeXLjEuMC4xLjGYAQCgAQHIAQjAAQE&scient=gws-wiz-serp](https://www.google.com/search?q=ICD-10+coding+system&rlz=1C1GCEA_enZA1014ZA1014&ei=u47PY7TLO4KA8gKii7-YDg&ved=0ahUKEwj0IM-d3d_8AhUCgFwKHaLFD-MQ4dUDCA8&uact=5&oq=ICD-10+coding+system&gs_lcp=Cgxnd3Mtd2l6LXNlcnAQAzIFCAAQgAQyBggAEByQHjIGCAAQFhAeMgYIABAWEB4yBggAEByQHjIGCAAQFhAeMgYIABAWEB4yBggAEByQHjIGCAAQFhAeMggIABAWEB4QCjoKCAAQRxDWBBcwAzoECAAQZoFCAAQKQI6BQguEIAEOgkIABAWEB4Q8QRKBahBGABKBAhGGABQywpY6W5giYoBaAJwAHgBgAHYBYgBniKSAQwyLTeXLjEuMC4xLjGYAQCgAQHIAQjAAQE&scient=gws-wiz-serp)
<https://www.who.int/standards/classifications/classification-of-diseases>
https://www.health.gov.za/wp-content/uploads/2021/02/icd-10_technical_mzuserguide.pdf

Janney, A., Powrie, F. & Mann, E.H. 2020. Host-microbiota maladaptation in colorectal cancer. *Nature*. 2020 Sep;585(7826):509-517.

Kim, B.J. & Hanna, M.H. 2023. Colorectal cancer in young adults. *J Surg Oncol*. 2023 Jun;127(8):1247-1251.

Kishora, C. & Bhadra, P. 2021. Current advancements and future perspectives of immunotherapy I colorectal cancer research. *Eur J Pharmacol*. 2021 Feb 15;893:173819.

Lepore Signorile, M., Grossi, V., Fasano, C. & Simone, C. 2023. Colorectal cancer chemoprevention: a dream coming true? *Int J Mol Sci*. 2023 Apr 20;24(8):7597.

Life is Beautiful: Adopt a balanced lifestyle and live cancer-free. 2012. A lifestyle publication of the Cancer Association of South Africa (CANSA).

Makarem, N., Lin, Y., Bandera, E.V., Jaques, P.F. & Parekh, N. 2015. Cancer causes and control. Doi:10.1007S10552-014-0509-9.

Mauri, G., Patelli, G., Crisafulli, G., Siena, S. & Bardelli, A. 2025. Tumor "age" in early-onset colorectal cancer. *Cell*. 2025 Feb 6;188(3):589-593.

Mayo Clinic – Colon Cancer

<http://www.mayoclinic.com/health/colon-cancer/DS00035/DSECTION=risk-factors>
<http://www.mayoclinic.com/health/colon-cancer/DS00035/DSECTION=symptoms>
<http://www.mayoclinic.com/health/colon-cancer/DS00035/DSECTION=prevention>

MedlinePlus

<http://www.nlm.nih.gov/medlineplus/ency/article/002071.htm>

Murphy, C.C. & Zaki, T.A. 2024. Changing epidemiology of colorectal cancer - birth cohort effects and emerging risk factors. *Nat Rev Gastroenterol Hepatol*. 2024 Jan;21(1):25-34.

National Bowel Cancer Screening Programme

<http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/fobt>

National Cancer Institute

<http://www.cancer.gov/cancertopics/wyntk/colon-and-rectal/page14>
<http://www.cancer.gov/cancertopics/pdq/treatment/colon/Patient/page2>
<http://www.cancer.gov/clinicaltrials/learningabout/what-are-clinical-trials>
<http://www.cancer.gov/cancertopics.factsheet.Sites-Types/metastatic>

NHS, UK.

<http://www.nhs.uk/Conditions/Cancer-of-the-colon-rectum-or-bowel/Pages/Diagnosis.aspx>

Numeric Stages

<http://www.webmd.com/digestive-disorders/ss/slideshow-digestive-myths>

Ogunwobi, O.O., Mahmood, F. & Akingboye, A. 2020. Biomarkers in Colorectal Cancer: Current Research and Future Prospects. *Int J Mol Sci*. 2020 Jul 27;21(15):5311.

Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Diagnostic Radiographer; Dip audiometry and Noise Measurement; Medical Ethicist]

Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]

May 2025

Page 13

O'Sullivan, D.E., Sutherland, R.L., Town, S., Chow, K., Fan, J., Forbes, N., Heitman, S.J., Hilsden, R.J. & Brenner, D.R. 2022. Risk Factors for Early-Onset Colorectal Cancer: A Systematic Review and Meta-analysis. *Clin Gastroenterol Hepatol*. 2022 Jun;20(6):1229-1240.e5.

Pandey, A., Shen, C. & Man, S.M. 2019. Inflammasomes in colitis and colorectal cancer: mechanism of action and therapies. *Yale J Biol Med*. 2019 Sep 20;92(3):481-498. eCollection 2019 Sep.

Patel, S.G. & Dominitz, J.A. 2024. Screening for colorectal cancer. *Ann Intern Med*. 2024 Apr;177(4):ITC49-ITC64.

Patel, S.G., Karlitz, J.J., Yen, T., Lieu, C.H. & Boland, C.R. 2022. The rising tide of early-onset colorectal cancer: a comprehensive review of epidemiology, clinical features, biology, risk factors, prevention, and early detection. *Lancet Gastroenterol Hepatol*. 2022 Mar;7(3):262-274.

Ries, L.A.G., Eisner, M.P., Kosary, C.L., Hankey, B.F., Miller, B.A., Clegg, L., Mariotto, A., Feuer, E.J., & Edwards, B.K. (eds). 2004. *SEER Cancer Statistics Review, 1975–2002*, National Cancer Institute. Bethesda, MD, based on November 2004 SEER data submission, posted to the SEER Website 2005.

Rodriguez, A.M., Kuo, Y.F. & Goodwin, J.S. 2014. Risk of colorectal cancer among long-term cervical cancer survivors. *Med Concol*. 2014 May;31(5):943. doi: 10.1007/s12032-014-0943-2. Epub 2014 Apr 3.

Rombouts, A.J.M., Huguen, N., van Beek, J.J.P., Poortmans, P.M.P., de Wilt, J.H.W. & Nagtegaal, I.D. 2018. Does pelvic radiation increase rectal cancer incidence? – A systematic review and meta-analysis. *Cancer Treat Rev*. 2018 Jul;68:136-144. doi: 10.1016/j.ctrv.2018.05.008. Epub 2018 Jun 26.

Siegel, R.L., Jakubowski, C.D., Fedewa, S.A., Davis, A. & Azad, N.S. 2020. Colorectal cancer in the young: epidemiology, prevention, management. *Am Soc Clin Oncol Educ Book*. 2020 Mar;40:1-14.

Sigmoidoscope

http://www.google.co.za/imgres?q=sigmoidoscope&hl=en&sa=X&tbo=d&rlz=1T4LENN_enZA490ZA490&biw=1821&bih=817&tbnm=isch&tbnid=-6eHQLTzC_Qi4M:&imgrefurl=http://www.learncolorectalsurgery.com/colonoscopy/4549818623&docid=P33E-PLF8ar56M&imgurl=http://www.learncolorectalsurgery.com/communities/2/004/008/282/282/images/4555247231.jpg&w=2048&h=1536&ei=7SjHUITMIPsq0AXT64DIAG&zoom=1&iact=hc&vpx=2&vpy=478&dur=1419&hovh=194&hovw=259&tx=107&ty=89&sig=109572939590628860228&page=1&tbnh=158&tbnw=205&start=0&ndsp=37&ved=1t:429,r:18,s:0,i:151

Sun, M., Wang, Y., Sundquist, J. Sundquist, K. & Ji, J. 2020. Temporal trends of sex disparity in incidence and survival of colorectal cancer: variations by anatomical site and age at diagnosis. *Clin Epidemiol*. 2020 Jan 20;12:73-81. doi: 10.2147/CLEP.S240006. eCollection 2020.

Thompson, R., Cheung, P., Chu, W., Myrehaug, S., Poon, I., Sahgal, A., Soliman, H., Tseng, C.L., Wong, S., Ung, Y., Beatriz Kinupe Abrahão, A., Erler, D., Zhang, L., Ko, Y.J. & Chung, H.T. 2019. Outcomes of extra-cranial stereotactic body radiotherapy for metastatic colorectal cancer: Dose and site of metastases matter. *Radiother Oncol*. 2019 Sep 19. pii: S0167-8140(19)33064-6. doi: 10.1016/j.radonc.2019.08.018. [Epub ahead of print]

Torresan, S., de Scordilli, M., Bortolot, M., Di Nardo, P., Foltran, L., Fumagalli, A., Guardascione, M., Ongaro, E. & Puglisi, F. 2024. Liquid biopsy in colorectal cancer: Onward and upward. *Crit Rev Oncol Hematol*. 2024 Feb;194:104242.

Von Wagner, C., Versetraete, W., Hirst, Y., Nicholson, B.D., Stoffel, S.T. & Laszlo, H. 2020. Public preferences for using quantitative faecal immunochemical test versus colonoscopy as diagnostic test for colorectal cancer: evidence from an online survey. *BJGP Open*. 2020 Feb 4. pii: bjgpopen20X101007. doi: 10.3399/bjgpopen20X101007. [Epub ahead of print]

WebMD

<http://www.webmd.com/digestive-disorders/digestive-diseases-stool-testing-blood-fecal-occult-blood-test>
<http://www.webmd.com/digestive-disorders/ss/slideshow-digestive-myths>

Wong, C.C. & Yu, J. 2023. Gut microbiota in colorectal cancer development and therapy. *Nat Rev Clin Oncol*. 2023 Jul;20(7):429-452.

Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Diagnostic Radiographer; Dip audiology and Noise Measurement; Medical Ethicist]

Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]

May 2025

Page 14

Wu, D., Song, Q.Y., Dai, B.S., Li, J., Wang, X.X., Liu, J.Y. & Xie, T.Y. 2025. Colorectal cancer early screening: Dilemmas and solutions. *World J Gastroenterol.* 2025 Mar 7;31(9):98760.

Zhang, C., Stampfl-Mattersberger, M., Ruckser, R. & Sebesta, C. 2023. Colorectal cancer. *Wien Med Wochenschr.* 2023 Jun;173(9-10):216-220.

Zygulska, A.L. & Pierzchalski, P. 2022. Novel Diagnostic Biomarkers in Colorectal Cancer. *Int J Mol Sci.* 2022 Jan 13;23(2):852.