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# **Colorectal Cancer**

## ****What is Colorectal Cancer?****

Colorectal cancer may begin in either the colon or the rectum. Adenocarcinomas make up 95% of colorectal cancers, starting in the mucosa of the colon or the rectum. Approximately 30-50% of colorectal tumors are known to have a mutated KRAS gene, which indicating that up to 50% of patients with colorectal cancer might respond to anti-epidermal growth factor receptor (EGFR) antibody therapy. However, 40-60% of patients with wild-type KRAStumors do not respond to such therapy.

26800 Canadians are diagnosed with colorectal cancer each year. Colorectal cancer survival continues to improve, due to improved screening, diagnosis and treatment. Approximately 64% of patients diagnosed with colorectal cancer will survive at least 5 years after diagnosis.

## What are the Other Types of Colorectal Cancer?

Rare colorectal tumours that begin in other cells of the colon or rectum make up the remaining 5% of colorectal cancers. These types of cancers are usually treated differently from adenocarcinomas. These include:

* Small cell carcinoma
* Squamous cell carcinoma
* Medullary carcinoma
* Neuroendocrine tumours
* Soft tissue sarcoma
* Non-Hodgkin lymphoma
* Melanoma

## What are the Risk Factors causing Colorectal Cancer?

Several risk factors for colorectal cancer have been identified. Colorectal cancer can develop in patients without any risk factors, but known risk factors include:

* **Family history:** if a parent, sibling or child has a history of colorectal cancer. If more than one family member, the risk is even greater.
* **Personal history of colorectal cancer or polyps:** increases the risk of developing cancer in the future.
* **Genetic conditions:**
  + ***Familial adenomatous polyposis (FAP):*** rare disorder that causes the development of thousands of polyps in the lining of your colon and rectum. People with untreated FAP have a greatly increased risk of developing colon cancer before age 40.
  + ***Hereditary nonpolyposis colorectal cancer (HNPCC)***, also known as ***Lynch syndrome:*** increases the risk of colon cancer and other cancers. People with HNPCC tend to develop colon cancer before age 50.
  + ***Rare genetic conditions:*** Turcot syndrome, Attenuated familial adenomatous polyposis, MYH-associated polyposis, Juvenile polyposis syndrome, Peutz-Jeghers syndrome, Hereditary mixed polyposis syndrome, Cowden syndrome, Bannayan-Riley-ruvalcaba syndrome
* **Older age:** majority of poeple diagnosed with colon cancer are older than 50 years of age. It may occur in younger individuals, however less frequently.
* **African-American race:** have a greater risk of colon cancer than do people of other races.
* **Inflammatory intestinal conditions:** chronic inflammatory diseases of the colon, such as ulcerative colitis and Crohn's disease, can increase risk of colon cancer.
* **Low-fiber, high-fat diet:**colon cancer and rectal cancer may be associated with a diet low in fiber and high in fat and calories. Research in this area has had mixed results. Some studies have found an increased risk of colon cancer in people who eat diets high in red meat and processed meat.
* **A sedentary lifestyle:** if you're inactive, you're more likely to develop colon cancer. Getting regular physical activity may reduce the risk of colon cancer.
* **Diabetes:**people with diabetes and insulin resistance have an increased risk of colon cancer.
* **Obesity:** increases risk of colon cancer and also increases the risk of dying of colon cancer when compared with people considered normal weight.
* **Smoking history**
* **Alcohol:** heavy use of alcohol increases risk of colon cancer.
* **Radiation therapy for cancer:**radiation therapy directed at the abdomen to treat previous cancers increases the risk of colon and rectal cancer.

## What are the Clinical Manifestations?

The early stages of colorectal cancer may not create any signs or symptoms, due to the tumours small size. Symptoms often present when the cancer grows into surrounding structures (including organs). Some common signs and symptoms of colorectal cancer include:

* Diarrhea
* Constipation
* Change in bowel habits
* Incomplete emptying of bowel
* Blood in stool, rectal bleeding
* Cramping, bloating, gas, feeling full
* Rectal pain/discomfort
* Abdominal or rectal lump
* Fatigue, weakness, pain in abdomen, buttocks or leg
* Difficulty breathing
* Anemia
* Nausea and vomiting
* Loss of appetite
* Weight loss
* Bowel obstruction and/or perforation
* Frequent urinary tract infections
* Swollen lymph nodes
* Hepatomegaly
* Jaundice
* Ascites

## What are the Treatment Options?

Each case is unique and requires a personalized medical treatment plan. The main types of treatment for colorectal cancer include:

* Surgery:is the only curative modality for localized colon cancer (stage I-III). Surgical resection potentially provides the only curative option for patients with limited metastatic disease in liver and/or lung (stage IV disease). Surgical options include the following: right hemicolectomy, extended right hemicolectomy, left hemicolectomy, sigmoid colectomy, total abdominal colectomy with ileorectal anastomosis.
* Other therapeutic options for patients who are not surgical candidates include the following: Cryotherapy, Radiofrequency ablation, Hepatic arterial infusion of chemotherapeutic agents.
* Chemotherapy: Use of drugs that systemically target and kills cancer cells. Regimens may include: 5-Fluorouracil (5-FU), Capecitabine, Oxaliplatin, Irinotecan, Combinations of multiple agents (eg, capecitabine or 5-FU with oxaliplatin, 5-FU with leucovorin and oxaliplatin).
* Radiation therapy: the use of rays or particles that are high in energy. May include external beam radiation, or brachytherapy.

What are the Possible Side Effects of Treatment?

1. Surgery:
   * Pain
   * Bleeding
   * Blood clots
   * Diarrhea and/or constipation
   * Paralytic ileus
   * Abdominal adhesions
   * Organ damage
   * Anastomotic leak
   * Infection
   * Sexual dysfunction
   * Bladder dysfunction
2. Chemotherapy:
   * Bone marrow suppresion leading to low blood cell counts
   * Diarrhea
   * Skin irritation
   * Hair loss
   * Sore mouth and throat
   * Nausea, vomiting
   * Loss of appetite
   * Injection site pain
   * Neuropathy
   * Liver damage
3. Radiation Therapy:
   * Diarrhea and/or fecal incontinence
   * Bowel obstruction
   * Radiation enteritis
   * Fatigue
   * Skin irritation
   * Nausea and/or vomiting
   * Bladder dysfunction
   * Sexual dysfunction
   * Pelvic fractures

## What is the Role of Physiotherapy and Rehab?

The goals of rehabilitation depend on the extent of the disease and the treatment that a patient has received. Physiotherapy can help manage the side effects of treatment, maintain overall functioning, and improve quality of life. This can be done using a variety of treatment approaches. These include:

**Physical Activity/Exercise:**

* Higher levels of physical activity after diagnosis have been associated with decreased colorectal cancer mortality.
* Although research continues to be conducted, several studies have found that supervised exercise program is safe during chemotherapy, and has been shown to improve physical and general fatigue, as well as improving physical functioning when compared to those who received usual care.
* Furthermore, prehabilitation research is increasing in the field of cancer rehabilitation, with recent work in the colorectal cancer population showing that one month of preoperative conditioning program, aimed at improving whole oxygen uptake capacity and increasing protein intake on tumor microenvironments, energy metabolism, and proliferation capacity needs to be elucidated.
* It is recommended that cancer survivors perform at least 150 min/week of moderate physical activity or 75 min/week of vigorous activity.
* Support for cancer patients returning to physical activity is recommended, including a supervised exercise program.

**Pelvic Floor Muscle Functioning:**

* Pelvic floor muscle training can improve fecal incontinence, stool frequency, and health related quality of life in patients who have undergone surgery for colorectal cancer. Furthermore, it is recommended as an early intervention for bowel dysfunction.
* Some evidence suggest that there may be improved benefits if the pelvic floor muscle training program is performed with biofeedback.
* Pelvic floor muscle training should include sessions with a qualified therapist, as well as a home exercise program.

## References & Resources

* American Cancer Society. Colorectal Cancer. Available at: <https://www.cancer.org/cancer/colon-rectal-cancer.html>
* Canadian Cancer Society. Colorectal cancer. Available at: <http://www.cancer.ca/en/cancer-information/cancer-type/colorectal/colorectal-cancer/?region=on>
* Canadian Cancer Society’s Advisory Committee on Cancer Statistics. (2017). Canadian Cancer Statistics 2017. Toronto, ON: Canadian Cancer Society.
* Lin, K., Granger, C.L., Denehy, L., and Frawley, H.C. (2015). Pelvic floor muscle training for bowel dysfunction following colorectal cancer surgery: A systematic review. Neurology and Urodynamics 34: 703-712.
* Lynch, B.M., van Roekel E.H., and Vallance, J.K. (2015). Physical activity and quality of life after colorectal cancer: overview of evidence and future directions. Expert Review of Quality of Life in Cancer Care. DOI: 10.1080/23809000.2016.1129902
* Meyerhardt, J.A.,  Giovannucci, E.K., Holmes, M.D., Chan A.R., Chan J.A., Colditz, G.A., and Fuchs C.S. (2006). Physical activity and survival after colorectal cancer diagnosis. Journal of Clinical Oncology 24(22) doi: 10.1200/JCO.2006.06.0855
* Rock, C.L., Doyle, C., Demark-Wahnefried, W., Meyerhardt, J., and Courtney, K.S. (2012). Nutrition and physical activity guidelines for cancer survivors. CA:A Cancer Journal for Clinicians, 62(4), 242-274. DOI: [10.3322/caac.21142](https://doi.org/10.3322/caac.21142)

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