



Occupational Health
Clinics for Ontario
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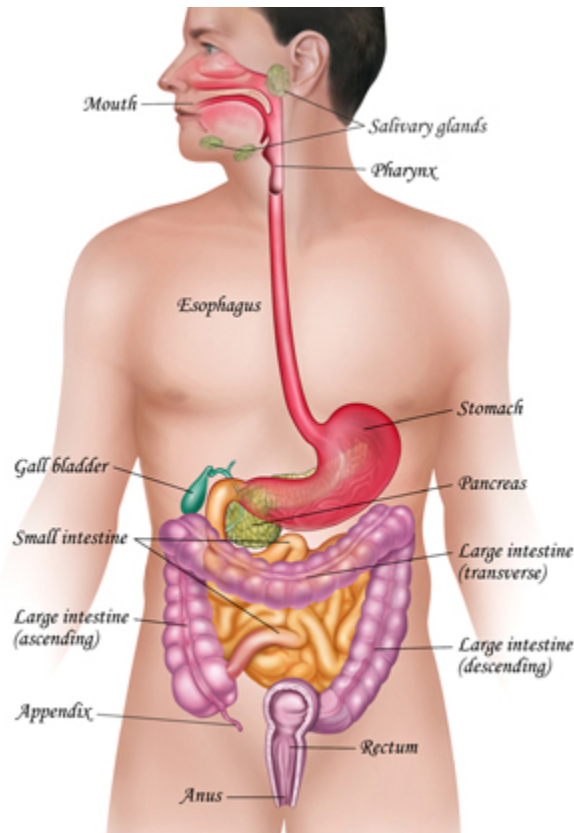
Colorectal Cancer and Occupation

What is colorectal cancer?

Colorectal cancer is the fourth most commonly diagnosed cancer in Canada and the second leading cause of death. It is more commonly seen in men than women.¹ Colorectal cancer occurs when cells that line the inside of the colon and rectum begin to mutate.

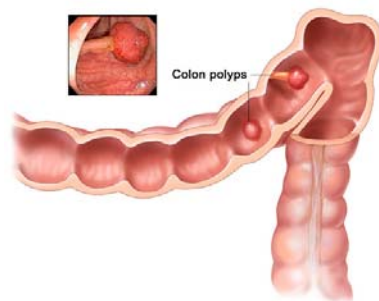
How does the digestive tract function?

The colon and rectum play vital roles in the gastrointestinal tract. The initial process of digestion begins in the mouth where the action of mastication (chewing) and the release of enzymes breaks down food into smaller pieces. Food then passes through the esophagus and into the stomach where food continues to be broken down and then passed into the duodenum (the first and shortest part of the small intestine). From the duodenum, food passes into the small intestine where all the essential vitamins, minerals, and nutrients are absorbed. The wastes enter the colon where water is reabsorbed and the collected wastes are passed to the rectum for defecation through the anus.¹



How is colorectal cancer detected?

Early detection and screening is imperative as treatment measures can be taken to improve prognosis. Cancer of the colorectal area can be detected through screening procedures such as a colonoscopy, where a flexible hose is inserted into the anus and through the colon to identify any abnormalities. The most common finding is polyps which are benign growths in the colon that can be removed during a colonoscopy procedure. If polyps are left ignored they can become malignant (cancer). When individuals reach the age of 50 they are at higher risk of developing polyps and cancerous growths within the colon. It is recommended to have a colonoscopy at 50 years of age and older for early detection and treatment of any polyps and for growths.²



What causes colorectal cancer and how can it be prevented?

There have been many studies conducted to investigate the causes of colorectal cancer. Some modifiable risks include alcohol consumption, smoking, obesity, diet, exercise, sleep and regular examinations for early detection. Non-modifiable risks include age, gender, crohn's disease, colitis, inflammatory bowel disease and heredity.³ Some research has shown a small link between increased alcohol consumption and smoking as risk factors. Other studies concluded that obesity is a high risk factor as the intake of high fat foods and red meats increase the incidence of colorectal cancer. Therefore, it is essential to consume foods high in fiber to prevent colorectal cancer and increasing diet intake of fruits and vegetables. Exercise is also beneficial as it promotes peristalsis. This in turn decreases the colon's exposure to carcinogens and promotes early defecation of these substances.⁴



Occupational risks

Many researchers have studied the correlation between colorectal cancer and occupational exposures. Clapp et al. (2005), found the correlation between colon cancer and occupational exposures to be limited. However, a link was found between exposures to solvents such as xylene and toluene and exposures to ionizing radiation. Rectal cancer is known to be more prominent among workers in grinding procedures when exposed to solvents such as xylene and toluene, metal working fluids and mineral oils especially.⁵ Another study revealed that rectal cancer was seen in wood working and metal working occupations. Studies are currently looking at the exposures of pesticides and herbicides used in the farming industry. Further discoveries were made indicating that tumors in the sigmoid colon were greatly associated with dusty jobs.⁶

Another study discovered a link between occupational exposures and rectal cancer with exposures to rubber dust, rubber pyrolysis products (chemical decomposition of organic material by heating in the absence of oxygen), cotton dust, wool fibers, rayon fibers, a group of solvents (carbon tetrachloride, methylene chloride, trichloroethylene, acetone, aliphatic ketones, aliphatic esters, toluene, styrene), polychloroprene, glass fibers, formaldehyde, extenders, and ionizing radiation.⁷

Studies were also conducted to determine if there is a correlation between night-shift workers and the risk of colorectal cancer. This concluded that nurses working night shifts

for over 15 years had a 35 percent greater risk of developing colorectal cancer. Further studies are being conducted to identify the causes. One theory is the effects of the melatonin hormone (the hormone that controls the body's circadian rhythms) which has antiproliferation effects on intestinal cancers.⁸



The causes of colorectal cancer continue to be investigated as the cases continue to increase in North America. Many modifiable and non-modifiable risks have been identified to establish some causes of colorectal cancer to strive for prevention measures. Occupational exposures continue to be studied by many researchers in hopes of raising awareness of the harmful substances that cause colorectal cancer so that workers have less risk of developing this form of cancer.

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References

¹ Canadian Cancer Society.

http://www.cancer.ca/ccs/internet/standard/0,2939,3172_10175_273118_langId-en,00.html

² Mayo Clinic. <http://www.mayoclinic.com/health/colon-cancer/DS00035/DSECTION=6>

³ National Cancer institute. <http://www.cancer.gov/cancertopics/prevention-genetics-causes/colon-and-rectal>

⁴ Gamble, J. (1994). Asbestos and colon cancer: A weight-of-the-evidence review. *Environmental Health Perspectives*. 102(12). pp. 1038-1050.

⁵ Clapp, R., Howe, G., & Lefevre, M. (2005). Environmental and occupational causes of cancer. A review of scientific literature. University of Massachusetts Lowell. pp. 15 & 22.

⁶ Peters, R., Garabrant, D., Yu, M., & Mack, T. (1989). A case-control study of occupational and dietary factors in colorectal cancer in young men subsite. *Cancer research*. 49. pp. 5459-5468.

⁷ Dumas, S., Parent, M., Siemietycki, J., & Brisson, J. (2000). Rectal cancer and occupational risk factors: A hypothesis-generating, exposure based case-control study. *International journal of cancer*. 87. pp. 874-879.

⁸ Smith, S. (2003). Night shift work and risk of colorectal cancer among nurses. *Occupational hazards*.