

## How Much Does Colonoscopy Reduce the Risk of Dying from Colon Cancer?

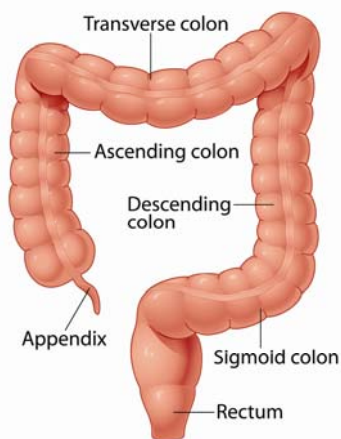
On December 15<sup>th</sup>, many news organizations reported the results of a study on how much colonoscopy reduces the risk of death from colon cancer. This is an important study that provides valuable information about the strengths and limitations of colonoscopy as a screening test for colon cancer. However, many of the news reports incorrectly interpreted the results of the study.

The title of the article is *Association of Colonoscopy and Death from Colorectal Cancer: A population-based, case-control study*. It was published in the prestigious medical journal *Annals of Internal Medicine*. The study was conducted in Ontario by respected researchers at the University of Toronto.

The researchers hypothesized that if undergoing colonoscopy does reduce the risk of dying from colon cancer, people who have died from colon cancer should have been **less likely** to have undergone a colonoscopy prior to their cancer diagnosis than those who did not die from colon cancer.

The researchers identified patients who had died from colon cancer from the Ontario Cancer Registry. They matched these cases to similarly aged people from the Ontario population who had not died from colon cancer. They used physician billing data from the Ontario Health Insurance Plan to identify those who had undergone colonoscopy. They then compared the likelihood that those who died from colon cancer had undergone a colonoscopy in their past compared to people who had not died from colon cancer.

The researchers did find that those who died from colon cancer were 40% less likely to have undergone a colonoscopy than those who did not die from colon cancer. However, this did not hold true for cancers in both sides of the colon. In those who had undergone a colonoscopy, there seemed to be a marked reduction in the risk of dying from colon cancer of the left side of the colon, but no reduction in the risk of dying from cancer of the right side of the colon.



**Figure 1: Anatomy of the Colon**

Right colon = ascending + transverse colon

Left colon = descending and sigmoid colon  
+ rectum

The researchers concluded that in usual practice in Ontario, colonoscopy is associated with fewer deaths from colon cancer, but that this association was primarily limited to deaths from cancer developing in the left side of the colon.

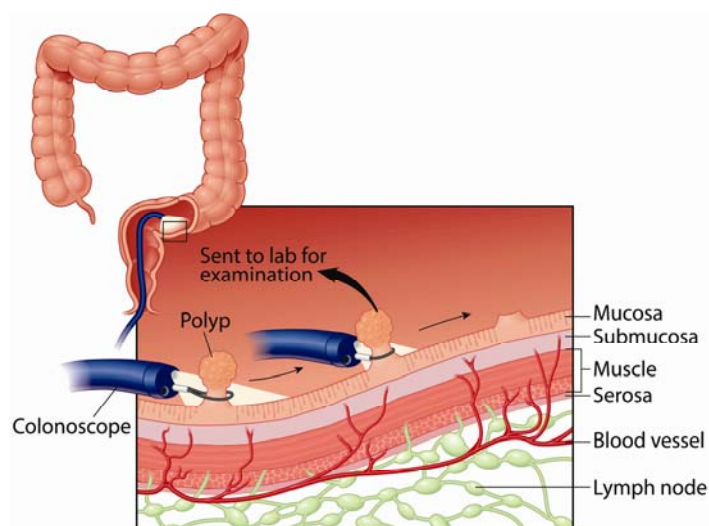
News reports about this article have been misleading. The headline of an article in the *Toronto Globe & Mail* about this article read "Colonoscopy misses cancers on the right side." *The New York Times* said colonoscopy "missed just about every cancer in the right side of the colon." This is not what the researchers showed.

We know colonoscopy is highly accurate in detecting colon cancer anywhere in the colon. Over 95% of cancers are detected by colonoscopy. The same researchers have previously shown that approximately 4% of right sided cancers were missed by colonoscopy.

In 1993, U.S. researchers suggested that colonoscopy with the removal of polyps reduced the risk of developing colon cancer by up to 90%. However, several lines of evidence now suggest that colonoscopy does not achieve a 90% reduction in colon cancer. The Ontario study, which was initially reported at the 2007 Annual Meeting of the American Gastroenterological Association, is one of several reports that have caused us to reassess how great the benefit of colonoscopy is. At the same meeting, a very similar study was reported out of San Francisco. Those researchers also found that colonoscopy profoundly reduced the risk of left sided cancers. They also found that colonoscopy substantially reduced the risk of colon cancer in the right colon in men but not women.

**So if colonoscopy is not missing right sided cancers, how can we explain the results of the study?**

There are three main theories. All of these are based on our knowledge that colon cancers arise from polyps. Polyps are non-cancerous growths on the lining of the colon that over time can turn into cancers. The primary goal of colonoscopy is to detect and remove these polyps, thereby hopefully preventing the development of colon cancer. So the concern is not that colonoscopy misses right sided cancers, but rather that colonoscopy misses right sided polyps that later turn into cancers.



**Figure 2: Removal of a polyp at colonoscopy**

## Possible Reasons for Colonoscopy Missing Right Side Colon Polyps

**Poor preparation of the right colon:** Prior to colonoscopy, the colon is cleaned with laxatives. However, after the laxatives have stopped working, it is possible for bile and mucous to coat the lining of the right colon. This coating can result in polyps being missed.

**Flat polyps:** Polyps come in different sizes and shapes. Many protrude from the bowel wall and are easy to identify. Some, however, are flat and more difficult to see. Flat polyps are more likely to be found in the right colon. Some types of flat polyps may progress more rapidly to cancer. We think it takes years for most polyps to turn into cancers, but some flat polyps may do so much quicker.

**Technical quality of the colonoscopy:** Obviously if the colonoscopy is performed poorly, with little time taken to examine the bowel wall or to look into hidden areas behind corners and folds, polyps or even cancers may be missed. Some studies have linked lower technical quality and higher cancer miss rates to less specialized and/or experienced physicians.

**Finally, we should put the results of this study in context.**

As opposed to the 90% reduction in colon cancer deaths suggested by the National Polyp Study, it is more likely that colonoscopy reduces the risk of dying from colon cancer by around 60% - 70%.

- The home stool blood test (fecal occult blood test), the most common form of colon cancer screening, reduces the risk of dying from colon cancer by about 20%.
- Mammograms reduce the risk of dying from breast cancer by about 25%.
- The PSA test for prostate cancer has no proven prostate cancer mortality reduction.

## **Steps we have taken to maximize the effectiveness of screening colonoscopy at the Colon Cancer Screening Centre.**

We have several policies and procedures in place to ensure that we provide colonoscopy of the highest quality.

- We closely follow clinical practice guidelines related to colon cancer screening. This includes guidelines on the appropriate timing of screening colonoscopy for groups at various risk for colon cancer and guidelines on the technical performance and quality of screening colonoscopy.
- Only subspecialized physicians, gastroenterologists and colorectal surgeons, perform colonoscopy at the Centre. These physicians have undergone extensive training in colonoscopy and perform a large number of procedures each year.
- We use latest generation colonoscopes that provide high definition video images of the bowel wall. Our colonoscopes also provide image enhancement technology to help better identify polyps.
- Our bowel preparation regimen can effectively clean the right colon. One of the most important aspects of the bowel prep is that the prep is not taken too far in advance of the colonoscopy. For people undergoing colonoscopy in the late morning or afternoon, we have them take some of the preparation in the morning to ensure that the right colon is clean.
- We have an active quality assurance program to ensure that physicians are performing at an acceptable level. We track key quality markers, including colonoscopy completion rates, colonoscopy inspection times and polyp detection rates.

## **Steps you can take to reduce your risk of dying from colon cancer.**

- Get screened with any of the recommended screening tests appropriate for you.
- If you choose to be screened by colonoscopy, it is most important that you follow the instructions for your bowel preparation and take all of the preparation.
- Be aware that although colonoscopy and other screening tests are very good, there is no perfect test. It is possible for cancers to be missed and for new polyps and cancer to develop. It is important that you see your family doctor promptly if you develop any new bowel symptoms, such as blood in your stool or a change in bowel habits.
- Live a healthy life style.

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