



# Colorectal Cancer Screening: A Review of the Evidence

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Colorectal cancer remains a serious health problem in the United States. The American Cancer Society (ACS) (2004) estimates 106,370 new cases of colon cancer and 40,570 new cases of rectal cancer annually. Furthermore, the ACS estimates that 56,730 people die from colorectal cancer annually (ACS). It is the third-leading cancer diagnosis and cause of cancer mortality in men and women.

Without intervention, about 5.6% of Americans will develop colorectal cancer during their lives (ACS, 2004). When colorectal cancer is diagnosed at the localized stage, the five-year survival rate is 90%, but only 37% of cases are diagnosed at the localized stage.

About 75% of people who develop colorectal cancer are considered to be at average risk. People at higher risk include those with a family history of colorectal cancer or a personal history of irritable bowel syndrome. Those at very high risk include people with a known mutation for familial adenomatous polyposis or hereditary nonpolyposis colorectal cancer. Screening guidelines for such individuals are much more rigorous than those described in this article for people of average risk.

Colorectal cancer is thought to arise from polyps in the colon. Data from the National Polyp Study demonstrated that an adenoma progresses to cancer in as long as 10 years (Winawer, 2001). Understanding this concept is crucial because it illustrates the length of time when prevention and early detection methods can interrupt the development of cancer. Therefore, the same methods used to detect colorectal cancer can be used to identify and remove polyps and ultimately prevent colorectal cancer from occurring.

Despite the widespread availability of effective screening tests, colorectal cancer screening lags behind screening for other cancers, such as breast and cervical cancer. About 50% of adults aged 50 years and older have had fecal occult blood testing (FOBT), lower endoscopy, or both in the last five years (Tiwari et al., 2004). Medicare coverage expanded in 1998 to include colorectal cancer screening, as do most commercial health plans. This has removed a significant barrier to colorectal cancer screening.

Less-than-optimal participation in screening might stem from confusion by the public and healthcare professionals regarding what constitutes appropriate screening. Much controversy is associated with colorectal cancer screening. Table 1 provides a comparison of screening guidelines from professional organizations. Most groups agree that screening should begin at age 50 in adults at average risk for developing colorectal cancer. Although the incidence of colorectal cancer is low at age 50, about 25% of adults will have adenomatous polyps (Smith et al., 2001). Thus, the underlying rationale for beginning screening at age 50 is based on the potential to detect and remove precursor lesions and polyps.

## Fecal Occult Blood Testing

FOBT refers to collecting and testing six samples (two each day) from three consecutive stools collected at home. Patients often are instructed to avoid red meat, fresh fruits and vegetables, vitamin C, iron, and nonsteroidal anti-inflammatory drugs for three days before FOBT and during sample collection. These substances may interfere with the accuracy of the test.

FOBT requires cooperation from patients. A single test of a stool sample during digital rectal examination (DRE) is not an adequate substitute for FOBT because colonic neoplasms often bleed intermittently or because blood is not present throughout the entire stool.

The specificity of FOBT in finding neoplastic lesions ranges from 23.9%–50%. The test seems to be slightly more sensitive, with a range of 35.6%–41% (Lieberman & Weiss, 2001). Serial screening with FOBT has the potential to reduce colorectal cancer mortality from 33% to 15% (Walsh & Terdiman, 2003). The biggest disadvantage of FOBT is that it fails to detect many polyps and some cancers. Similarly, most people who test positively do not have colorectal cancer and thus undergo additional and often unnecessary testing and costs.

FOBT often is limited by low participation rates. One reason that patients choose not to complete and return the FOBT cards is that they have difficulty following the dietary restrictions and dislike collecting stool samples.

Controversy also exists regarding how to perform the test. A rehydration procedure enhances the sensitivity of the test at the expense of specificity. Rehydration is accomplished by adding a few drops of water to the stool samples before adding the reagent

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