



Colorectal cancer screening

Recommendation statement from the Canadian Task Force on Preventive Health Care

Recommendations

Recommendations apply to asymptomatic people with no personal history of ulcerative colitis, polyps, or colorectal cancer.

- **For people at normal risk**, there is good evidence to include annual or biennial fecal occult blood testing (grade A recommendation) and fair evidence to include flexible sigmoidoscopy (grade B recommendation) in the periodic health examination of asymptomatic people older than 50 years. There is insufficient evidence to recommend whether only one or both tests should be performed (grade C recommendation). There is insufficient evidence to include or exclude colonoscopy as an initial screening test in the periodic health examination of people in this age group (grade C recommendation).
- **For people at above-average risk**, there is fair evidence to include either genetic testing or flexible sigmoidoscopy in the periodic health examination of people in kindreds with familial adenomatous polyposis (grade B recommendation). There is fair evidence to include colonoscopy screening in the periodic health examination of patients in kindreds with hereditary nonpolyposis colon cancer (grade B recommendation). There is insufficient evidence to recommend colonoscopy for people who have a family history of colorectal polyps or cancer but who do not meet the criteria for hereditary nonpolyposis colon cancer (grade C recommendation).

In Canada, colorectal cancer is the third most common cancer, accounting for more than 12% of cases of cancer in both sexes. It was estimated that there would be 17 000 new cases and 6500 deaths from colorectal cancer in Canada in 2000.¹ These rates, particularly among men, are among the highest in the world. People in kindreds with familial adenomatous polyposis or hereditary nonpolyposis colon cancer have close to a 50% chance of acquiring colorectal cancer because of the autosomal dominant mode of inheritance of these syndromes. Similarly, people with a family history of colorectal cancer who do not meet the criteria for hereditary nonpolyposis colon cancer or familial adenomatous polyposis might be at increased risk, but that risk is less well defined.

Maneuvers

For people at normal risk:

- multiphasic screening with fecal occult blood test as first phase,
- multiphasic screening with sigmoidoscopy, and
- uniphase screening with colonoscopy.

For people at above-average risk:

- flexible sigmoidoscopy or genetic testing for people in kindreds with familial adenomatous polyposis,
- colonoscopy for people in kindreds with hereditary nonpolyposis colon cancer, and
- colonoscopy for people with a family history (first-degree relative) of polyps or colorectal cancer.

Potential benefits

- Reduction in mortality from colorectal cancer

Potential harms

- Sequelae of false-positive or false-negative results from fecal occult blood tests (eg, unnecessary investigations and false reassurance)
- Perforation (sigmoidoscopy 1.4 per 10 000 procedures; colonoscopy 10 per 10 000 procedures); bleeding
- Anxiety, poor compliance

Recommendations by others

The Ontario Expert Panel on Colorectal Cancer recommends a multiphasic screening program, beginning with fecal occult

blood testing, for people at normal risk between the ages of 50 and 75 years.² The United States Preventive Services Task Force recommends screening with either annual fecal occult blood testing or sigmoidoscopy (interval unspecified) or both for people older than 50 years.³ Some groups in the United States, including the American Cancer Society, the American College of Gastroenterology, the Crohn's and Colitis Foundation of America, and the Oncology Nursing Society, recommend screening with fecal occult blood testing annually, flexible sigmoidoscopy every 5 years; combined fecal occult blood testing and flexible sigmoidoscopy, double-contrast barium enema every 5 to 10 years; or colonoscopy every 10 years for people aged 50 or older with no other risk factors.⁴

These groups also made recommendations for people with additional risk factors: genetic counseling and possible genetic testing for those at risk of familial adenomatous polyposis and, for people with positive genetic test results, flexible sigmoidoscopy beginning at puberty. For people in kindreds with hereditary nonpolyposis colon cancer, annual colonoscopy beginning when patients are between 20 and 30 years old is recommended. These groups made screening recommendations for people with a family history of polyps or colon cancer similar to those for people at normal risk but beginning at age 40 rather than 50.

Evidence and clinical summary

Although there is good evidence (from randomized controlled trials) to include screening with a fecal occult blood test in the periodic health examination of asymptomatic people older than 50 years,⁵⁻⁸ concerns remain about the high rate of false-positive results, feasibility, and small clinical benefit of such screening. The number needed to screen for 10 years to avert one death from colorectal cancer is 1173.

There is fair evidence to include screening with sigmoidoscopy,⁹⁻¹¹ but it is unclear whether to perform one or both of fecal occult blood testing and sigmoidoscopy.¹²⁻¹⁴

There is no direct evidence that colonoscopy is an effective screening maneuver for people at normal risk, even though it is the best method for detecting adenomas and carcinomas. It might not be feasible to screen these people because of poor compliance, the expertise and equipment required, and potential costs. If colonoscopy were an effective screening strategy when performed less frequently, however, these issues might be of less concern.^{15,16}

Genetic testing is indicated for people at risk for familial adenomatous polyposis, followed by flexible sigmoidoscopy for those carrying the mutation.^{17,18} People from families in which the gene mutation has been identified but who do not carry the mutation themselves require screening similar to that for people at normal risk. For people at risk where the mutation has not been identified in the family or where genetic testing is unavailable, screening with annual or biannual flexible sigmoidoscopy should start at puberty. In all instances, genetic counseling should be given before genetic testing.

For people from families with hereditary nonpolyposis colon cancer, colonoscopy rather than sigmoidoscopy is recommended (level III evidence).¹⁹ Although higher levels of evidence are usually required for a grade B recommendation, it is unlikely that more rigorous studies of these patients could be performed given the high risk of cancer and the relative infrequency of hereditary nonpolyposis colon cancer. The age at which screening should begin and the frequency with which colonoscopy should be performed are unclear.

People who have only one or two first-degree relatives with colorectal cancer require screening similar to that for people at normal risk.

Because most screening options are multiphasic, adequate infrastructure is required to support implementation and to ensure quality control and optimal and timely follow up of screened patients.

Identification of people at increased risk of colon cancer

Familial adenomatous polyposis

- Multiple adenomatous polyps progressively develop throughout the colon
- Polyps first appear after puberty
- Other benign and malignant lesions, including gastric and duodenal polyps, desmoid tumours, osteomas, and retinal lesions, occur with variable frequency

Hereditary nonpolyposis colon cancer

- This cancer is typified by many family members affected with cancer, including cancers of the colon and rectum and the endometrium, stomach, small bowel, pancreas, ovaries, ureter, and renal pelvis in some families. The Amsterdam criteria are three family members affected with colorectal cancer, two of whom are in successive generations, and at least one is younger than 45 years.²⁰
- Colorectal cancers tend to be right sided, to occur at an early age, to have poor prognostic histologic features (poorly differentiated, mucinous), and to be more advanced at presentation. ❖

Family history

- People who have two or more first-degree relatives with colorectal cancer have an increased, age-adjusted relative risk of colorectal cancer.

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This statement is based on the technical report "Preventive health care, 2001 update: screening strategies for colorectal cancer," by Robin S. McLeod, with the Canadian Task Force on Preventive Health Care. The full technical report is available from the task force office (ctf@ctfphc.org).

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References

1. National Cancer Institute of Canada. *Canadian cancer statistics 2000*. Toronto, Ont: National Cancer Institute of Canada; 2000.
2. Ontario Expert Panel on Colorectal Cancer. *Colorectal cancer screening: final report of the Ontario Expert Panel*. Toronto, Ont: Cancer Care Ontario; 1999. p. 28-31. Available in pdf format from: www.cancercare.on.ca/colorectal.pdf. Accessed 2001 June 15.
3. US Preventive Services Task Force. *Screening for colorectal cancer. Guide to clinical preventive services*. Alexandria, Va: International Medical Publishing; 1996. p. 89-103.
4. Winawer SJ, Fletcher RH, Miller L, Godlee F, Stolar MH, Mulrow CD, et al. Colorectal cancer screening: clinical guidelines and rationale. *Gastroenterology* 1997;112(2):594-642.
5. Mandel JS, Church TR, Ederer F, Bond JH. Colorectal cancer mortality: effectiveness of biennial screening for fecal occult blood. *J Natl Cancer Inst* 1999;91(5):434-7.
6. Kronborg O, Fenger C, Olsen J, Jorgensen OD, Sondergaard O. Randomised study of screening for colorectal cancer with faecal-occult-blood test. *Lancet* 1996;348(9040):1467-71.
7. Hardcastle JD, Thomas WM, Chamberlain J, Pye G, Sheffield J, James PD, et al. Randomised, controlled trial of faecal occult blood screening for colorectal cancer. Results for first 107,349 subjects. *Lancet* 1989;1(8648):1160-4.
8. Kewenter J, Bjork S, Haglund E, Smith L, Svanvik J, Ahren C. Screening and rescreening for colorectal cancer. A controlled trial of fecal occult blood testing in 27,700 subjects. *Cancer* 1988;62(3):645-51.
9. Friedman GD, Collen MF, Fireman BH. Multiphasic health checkup evaluation: a 16-year follow-up. *J Chronic Dis* 1986;39(6):453-63.
10. Newcomb PA, Norfleet RG, Storer BE, Surawicz TS, Marcus PM. Screening sigmoidoscopy and colorectal cancer mortality. *J Natl Cancer Inst* 1992;84(20):1572-5.
11. Muller AD, Sonnenberg A. Protection by endoscopy against death from colorectal cancer. A case-control study among veterans. *Arch Intern Med* 1995;155(16):1741-8.
12. Verne JE, Aubrey R, Love SB, Talbot IC, Northover JM. Population based randomized study of uptake and yield of screening by flexible sigmoidoscopy compared with screening by faecal occult blood testing. *BMJ* 1998;317:182-5.
13. Berry DP, Clarke P, Hardcastle JD, Vellacott KD. Randomized trial of the addition of flexible sigmoidoscopy to faecal occult blood testing for colorectal neoplasia population screening. *Br J Surg* 1997;84(9):1274-6.
14. Rasmussen M, Kronborg O, Fenger C, Jorgensen OD. Possible advantages and drawbacks of adding flexible sigmoidoscopy to hemoccult-II in screening for colorectal cancer. A randomized study. *Scand J Gastroenterol* 1999;34:73-8.
15. Mandel JS, Bond JH, Church TR, Snover DC, Bradley GM, Schuman LM, et al. Reducing mortality from colorectal cancer by screening for fecal occult blood. Minnesota Colon Cancer Control Study. *N Engl J Med* 1993;328:1365-71.
16. Mandel JS, Church TR, Bond JH, Ederer F, Geisser MS, Mongin SJ, et al. The effect of fecal occult blood screening on the incidence of colorectal cancer. *N Engl J Med* 2000;343:1603-7.
17. Bulow S, Bulow C, Nielsen TF, Karlsen L, Moesgaard F. Centralized registration, prophylactic examination, and treatment results in improved prognosis in familial adenomatous polyposis. Results from the Danish Polyposis Register. *Scand J Gastroenterol* 1995;30:989-93.
18. Powell SM, Petersen GM, Krush AJ, Booker S, Jen J, Giardiello FM, et al. Molecular diagnosis of familial adenomatous polyposis. *N Engl J Med* 1993;329:1982-7.
19. Burke W, Petersen G, Lynch P, Botkin J, Daly M, Garber J, et al. Recommendations for follow-up care of individuals with an inherited predisposition to cancer. I. Hereditary nonpolyposis colon cancer. Cancer Genetics Studies Consortium. *JAMA* 1997;277(11):915-9.
20. Vasen HF, Watson P, Mecklin JP, Lynch HT. New clinical criteria for hereditary nonpolyposis colorectal cancer (HNPCC, Lynch syndrome) proposed by the International Collaborative group on HNPCC. *Gastroenterology* 1999;116:1453-6.

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