

Prevention of colorectal cancer: guidelines based on new data*

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Recently published good quality data are the basis for this update. The newly reported studies include randomized trials, non-randomized cohort studies, and case-control studies; some of the data had mortality reduction as the endpoint. These guidelines, which were developed by the WHO Collaborating Center for the Prevention of Colorectal Cancer at Memorial Sloan-Kettering Cancer Center in conjunction with an International Advisory Committee, include primary prevention, screening of average-risk individuals, screening of individuals with heritable factors for colorectal cancer, surveillance of patients with colorectal polyps, and surveillance of patients with chronic ulcerative colitis. A list of papers reviewed for this update are cited, including recently published trials evaluating faecal occult-blood testing, case-control studies of sigmoidoscopy, the National Polyp study, and familial colon cancer studies. These guidelines will help inform patients and guide physicians in their approach to the prevention of colorectal cancer.

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Introduction

This update of the WHO working guidelines for the prevention of colorectal cancer is based on current clinical and statistical information and may change as new data become available. The data utilized vary in level of strength and study design and include randomized control trials, observational studies, case-control trials and non-randomized control trials. The strongest data support the effectiveness of screening average-risk patients with stool blood testing and sigmoidoscopy, and colonoscopic polypectomy for patients with polyps. This update was developed by a WHO Working Panel and then circulated to the International Advisory Committee of the WHO Collaborating Center for the Prevention of Colorectal Cancer.^a Revisions have been made to the previous WHO working guidelines for primary prevention and for patients with polyps and relatives of patients with colorectal cancer based on recent reports. No major revisions were required in the

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guidelines for average-risk individuals, although there are new data that provide additional evidence in support of them. No major revisions were required in the guidelines for patients with ulcerative colitis.

These guidelines will help inform patients and guide physicians in their approach to patients, and encourage good medical practice. They should be used as part of the physician's overall consideration of the patient's problem, the natural history and risks of the disease, perceived benefits of screening, cost-effectiveness, available resources, and patient acceptance. Clinical practice ultimately must be based on the physician's judgement, with consideration of the above factors as they apply to individual patients.

Recommended guidelines

For primary prevention of colorectal cancer

The following guidelines are intended for the primary prevention of colorectal cancer in average and high-risk individuals.

1. Fat consumption should be low, not exceeding 20% of total calories. Both animal and vegetable fat should be reduced to achieve this goal.
2. A balanced diet should be consumed. It should include at least 5 to 8 servings daily of fruits and vegetables, legumes, and whole grain cereals and breads in order to provide adequate fibre, vitamins and other components with potential anti-carcinogenic effects.
3. Dietary fibre from all sources should be at least 25 g/day.
4. Consumption of excess calories and being overweight should be avoided.
5. Tobacco use should be avoided.
6. Physical activities should be incorporated into daily routine (walk rather than drive short distances, climb the stairs rather than take the lift or elevator).

For screening of average-risk individuals

The following guidelines are intended to reduce the risk of colorectal cancer in individuals at average risk.

1. Men and women should be encouraged to seek preventive check-ups.
2. Persons with symptoms suggesting colorectal neoplasia are not candidates for screening but should be investigated for a diagnosis.
3. Asymptomatic individuals should have their risk evaluated to rule out inherited syndromes, inflammatory bowel disease, or a past history of adenomas or colorectal cancer, as they need individual-

ized surveillance according to guidelines for high-risk people.

4. Asymptomatic men and women seeking check-ups who have no risk factors should have a 6-window faecal occult-blood test annually beginning at age 50, and a digital rectal examination and flexible sigmoidoscopy every 3–5 years beginning at age 50.
5. A patient with a positive stool test should have a complete evaluation of the colon by colonoscopy or by flexible sigmoidoscopy and double-contrast barium enema. Colonoscopy is preferred.
6. These examinations should be done as part of comprehensive primary and secondary preventive measures in individuals during their medical check-ups.

For screening relatives of patients with colorectal cancer

The following guidelines are intended to reduce the risk of colorectal cancer in first-degree relatives (parents, siblings, children) who are at increased risk because of a family history of colorectal cancer.

1. First-degree relatives of individuals with colon cancer should, at a minimum, undergo average-risk screening beginning by 35–40 years of age (faecal occult-blood testing annually, digital rectal examination and sigmoidoscopy every 3–5 years). An alternative approach is colonoscopy every 3–5 years; this is especially indicated if the index case was diagnosed at an age less than 55 years or if two or more first-degree relatives are affected with colon cancer.
2. Adenomatous polyps in first-degree relatives and colon cancer in second-degree relatives add to the familial risk of colon cancer.
3. Inherited syndromes (familial adenomatous polyposis or hereditary nonpolyposis colorectal cancer) should be considered whenever colon cancer is diagnosed in a relative when under 40 years old or three or more relatives are affected with colon cancer. These might include first- and second-degree relations, although, larger family size makes chance clusters of colon cancer more likely.

For surveillance of patients with colorectal polyps

The following guidelines are intended to reduce the risk of colorectal cancer in individuals at increased risk because of the presence of adenomatous polyps.

1. When a polyp has been identified by colonoscopy or barium enema, it should be removed for histo-

logical examination and classified according to the criteria of the World Health Organization. Small (≤ 0.5 cm) polyps found on sigmoidoscopy should be biopsied. Complete colonoscopy is indicated for adenomas of any size.

2. Complete colonoscopy should be performed at the time of polypectomy to detect and remove all synchronous polyps. Additional examinations may be needed after resection of a large sessile polyp, numerous polyps or a polyp with invasive cancer.
3. In the large bowel, the terms carcinoma-*in-situ* and intramucosal carcinoma should be avoided in clinical use because they can lead to overtreatment. The term high-grade dysplasia is preferred. Adenomas with high-grade dysplasia that are completely removed do not need surgical resection of the bowel in addition to complete polypectomy. Polyps with cancer that is poorly differentiated, or involves lymphatic or vascular spaces, or extends to the cauterization line usually require surgery but each case must be judged individually. Rectal polyps that have invasive cancer with these characteristics can usually be managed initially by trans-anal local excision following the polypectomy. A decision regarding additional management, i.e., radiation, surgery, imaging, and endoscopic follow-up must be individualized with consideration of the pathology and completeness of excision.
4. Most patients with adenomas need surveillance, in which the first follow-up colonoscopy is deferred for 3 years after clearing of the entire colon, in order to detect and remove missed synchronous adenomas and subsequent (metachronous) adenomas. Additional follow-up examinations can be done less frequently, approximately every 5 years, particularly if the first follow-up colonoscopy has been negative. Some patients will require alternative individualized follow-up, e.g., patients having (at initial colonoscopy) a polyp with invasive cancer, a large sessile adenoma or numerous adenomas may require more frequent follow-up examinations, while patients with only a single small tubular adenoma may require less frequent follow-up examinations or none at all.

For surveillance of patients with chronic ulcerative colitis

The following guidelines are intended to reduce the risk of colorectal cancer in patients with chronic ulcerative colitis.

1. Surveillance colonoscopies should be initiated in patients with 8 years of symptoms who have pancolitis (extending to at least the hepatic flexure)

and in those with left-sided colitis (more distal involvement) after 12–15 years.

2. Surveillance colonoscopies should be repeated every 1–2 years. Biopsies should be taken from normal-appearing mucosa at 10–12 cm intervals throughout the colon.
3. Multiple biopsies should be obtained from areas of mucosal irregularity and plaque-like lesions; both biopsies and cytology brushings should be obtained within strictures.
4. Expert pathological consultation should be obtained.
5. If the biopsies are classified as negative or indefinite for dysplasia, surveillance should be continued at 1–2-year intervals.
6. If low-grade dysplasia is found, follow-up in three to six months is advisable. Colectomy is indicated: (a) for a macroscopic lesion with overlying low-grade dysplasia; (b) for low-grade dysplasia in multiple foci; and, (c) possibly for persistent unifocal low-grade dysplasia on repeated examinations.
7. If unequivocal high-grade dysplasia is found, colectomy is indicated.
8. In patients with difficult-to-control colitis of 8 or more years' duration, cancer risk also should be considered in determining if colectomy is appropriate.

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